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VOLATILE ORGANIC COMPOUNDS IN THE AMBIENT ATMOSPHERE OF THE NEW JERSEY, NEW YORK AREA

by

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From 1979 through 1981 data were collected on selected volatile organics in the ambient atmosphere of New Jersey and New York. Compounds measured were: benzene, toluene, xylenes, styrene, ethylbenzene, nitrobenzene, chlorobenzene, dichlorobenzenes, chlorotoluenes, vinyl chloride, trichloroethylene, tetrachloroethylene, 1,2-dibromoethane, 1,2-dichloroethane, 1,1-dichloroethylene, carbon tetrachloride, chloroform, methylene chloride, methyl ethyl ketone, and methyl isobutyl ketone. The sites selected included urban, suburban rural, and industrial areas: Newark, Rutherford, South Amboy, Elizabeth, Camden and Batsto Village in New Jersey. Samples were collected in two residential areas of Staten Island, a borough of New York City which is adjacent to a highly industrialized area of New Jersey. Samples were also collected in the Yorkville area of Manhattan, to obtain an urban sample with less impact from New Jersey industry. In addition, studies were carred out on the sample trapping methodology, as well as on the correlation of the data obtained with wind direction during sampling. Generally, the aromatic compounds, especially benzene, toluene and p-xylene were the most common pollutants found and were usually the most concentrated of the species determined. Levels were usually in the low parts per billion range.

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ABSTRACT

From 1979 through 1981 the Air Pollution Research Laboratory collected data on a selected group of volatile organic compounds in the ambient atmosphere at several sites in the states of New Jersey and New York. Included were aromatic solvents such as benzene, toluene, xylenes, styrene, ethylbenzene and nitrobenzene; chlorinated aromatic compounds such as chlorobenzene, dichlorobenzenes, and chlorotoluenes. Several halogenated two-carbon compounds were determined including vinyl chloride, trichloroethylene, tetrachloroethylene, 1,2-dibromoethane, 1,2-dichloroethane and 1,1-dichloroethylene. Carbon tetrachloride, chloroform and methylene chloride were determined, as well as methyl ethyl ketone and methyl isobutyl ketone.

The sites selected included urban, suburban rural and industrial areas. During 1979, under funding by both EPA and the New Jersey Department of Environmental Protection sites in Newark, Rutherford, South Amboy, Elizabeth, Camden and Batsto Village were sampled every sixth day. In 1980 sampling continued in Rutherford and Batsto, giving an 18 month database on a suburban site impacted by industry (Rutherford) and a rural site in the Pinelands of New Jersey (Batsto). The following year samples were collected in two residential areas of Staten Island, a borough of New York City which is adjacent to a highly industrialized area of New Jersey. Samples were also collected in the Yorkville area of Manhattan, to obtain an urban sample with less impact from New Jersey industry.

In addition, studies were carried out on the sample trapping methodology, as well as on the correlation of the data obtained with wind direction during sampling.

Generally, the aromatic compounds, especially benzene, toluene and p-xylene were the most common pollutants found and were usually the most concentrated of the species determined. Levels were usually in the low parts per billion range.

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ABBREVIATIONS AND SYMBOLS

CF(I)	Concentration factor for wind direction I
ECD	Electron capture gas chromatographic detector
FID	Flame ionization gas chromatographic detector
GC	Gas chromatograph
GC/MS	Gas chromatograph-mass spectrometer
NJDEP	New Jersey Department of Environmental Protection
ppb	Parts per billion by volume
ppt	Parts per trillion by volume
SCOT	Support coated open tubular gas chromatographic column
SP2100	Methyl silicone chromatographic stationary phase
V_g	Breakthrough volume per gram of adsorbent
V_{g-max}	Retention volume per gram of adsorbent
V_N	Normalized breakthrough volume
V_{N-max}	Normalized retention volume
WCOT	Wall coated open tubular chromatographic column
WN(I)	Wind vector number for wind direction I
X	Average concentration of pollutant in wind direction calculations

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We are also grateful to all the personnel of the Air Pollution Research Laboratory, especially Liam Horgan and James Kemp whose interest and dedication made this project possible.

SECTION 1

INTRODUCTION

Epidemiological studies in recent years have shown that certain localities have above average occurrences of particular diseases. One possible explanation for this is that the population is exposed to different substances in each local environment. Since the ambient atmosphere has been shown to contain measureable concentrations of volatile chemical compounds which are known to be toxic, mutagenic, and possibly carcinogenic, it is important to develop a data base describing the exposure of residents to these vapors. Data on the correlation between health effects and exposure to organic vapors at the part-per-billion concentration is not yet available, but the epidemiology needed to develop such data cannot be accomplished without information on the concentrations currently existing in the ambient air.

The three-year study completed in the Air Pollution Research Laboratory of The New Jersey Institute of Technology has had as its major purpose the development of a long term data base on the concentration of a selected group of volatile organic compounds in the atmosphere at several locations in the New Jersey-New York area. Monitoring was carried out over a span of two years at two sites, a residential neighborhood with considerable chemical industry nearby, Rutherford, NJ, and a relatively pristine area in the Pine Barrens of southern New Jersey, Batsto Village. With samples collected every sixth day at these locations, the data obtained in these two places are among the most extensive ever tabulated.

Several secondary purposes were also accomplished during the project. The development and refinement of the analytical method was important. Improvements were made continually to raise the precision of the method, to characterize the properties of the sample trapping system, to develop standardization procedures, to improve the sampling system, and to develop an overall quality assurance protocol. In addition, some correlation studies were carried out to determine the relation between the concentration of the pollutants being analyzed and the direction of the wind during the collection period.

In summation, during the course of this three year project 411 samples were collected and analyzed, an analytical method was refined, a quality assurance protocol was developed, and studies on sampling systems and standardization procedures were carried out.

SECTION 2

CONCLUSIONS

The ambient atmosphere at a variety of sites in New Jersey and New York has been monitored for twenty seven organic vapors down to the sub-part-per-billion level, for a total of two and one half years. Two sites, Rutherford and Batsto, NJ were monitored for two years, giving the longest continuous data base for this type of analysis. Samples were also taken for a year in Elizabeth, South Amboy, Newark and Camden. A six-month sampling program was carried out in Staten Island, with some samples taken in Manhattan for comparison.

The analytical method has been developed and refined during the course of the project. The sampling adsorbents used have been studied for their collection efficiency and for their desorption characteristics. A quality assurance protocol was developed. Sampling equipment was built and improved during the project.

In addition, the collected data was correlated with the wind direction prevailing during the sampling period. A review of similar studies in the literature, and comparison with the present findings is included.

The results from the monitoring carried out in this project show that there are a large number of organic vapors present in the ambient atmosphere, especially in the urban areas sampled. Many samples showed two hundred compounds. Of these, the known carcinogen, benzene, proved to be ubiquitous, although at low levels. The benzene levels ranged from a low average of 0.9 ppb at the Pineland site, to a high average of 6.2 ppb in Elizabeth. Other toxic and/or suspected carcinogenic compounds frequently detected were toluene, trichloroethylene, and tetrachloroethylene.

The differences in overall contamination of the atmosphere by these compounds between the urban sites and the rural Batsto site is evident, with many fewer compounds, at much lower levels, detected.

The monitoring of these compounds over a substantial period of time generates important data for future studies on the transport of pollutants, on the epidemiological impact of the organic fraction of air pollution, and on the longer range trends in these levels brought about by changes in industrial, domestic and transportation patterns in the country.

SECTION 3

RECOMMENDATIONS

This work indicates a number of directions for future research. The gathering of information on health statistics in the areas tested and the correlation of these data with air pollution data is certainly a worthwhile enterprise, if sufficient air monitoring data is available. Since this report covers a limited selection of sites, and a relatively short period of time for the assessment of chronic health effects, it may be necessary to await further data before implementing this suggestion. Further monitoring is certainly valuable to extend the time frame of the database, and an extension of the area covered would also be useful. A great deal of further correlation between meteorological and the pollution data presented here is warranted, since the correlations done herein are only preliminary in nature.

During the performance of the study on adsorbents for collection of organic vapors from the atmosphere, it was found that much of the literature on the subject was difficult to use fully as different information is presented in each and important parameters are not reported in all. The authors, therefore, feel that, in order to make adsorbent test data most useful to all workers, a certain minimal amount of information should be included in all future publications on this subject. It appears that several standard experimental techniques and conversion methods should be adopted for obtaining values of breakthrough volumes of volatile organic vapors on adsorbents. While the best way to determine standard procedures would be through a study by, or including comments from all the investigators in this field, some temporary suggestions are made.

Breakthrough and retention volume studies using actual GC columns or adsorbent columns longer than the actual sampling cartridges utilized in the field, should use the conversion method of Butler and Burke.(1) The adsorbate sample size should optimally be in the 0.1 to 50 microgram range with the larger samples requiring tests on larger diameter cartridges and adsorbent quantities. Correlation coefficients for plots of breakthrough or retention volume versus temperature should be reported and the temperature range over which the studies are performed should approach or equal, as nearly as possible, that of the sample collection in field use. It is also recommended that some experiments be performed to determine if unexpected early breakthrough occurs at lower temperatures (near field sampling conditions) due to lower rates of adsorption i.e. kinetic effects.

SECTION 4

EXPERIMENTAL

SAMPLE SITE SELECTION

Locations for the sampling were decided in consultation with personnel of both the United States Environmental Protection Agency (USEPA) and the New Jersey Department of Environmental Protection (NJDEP). Since a project involving similar sample collection and analysis was being carried out at other sites simultaneously for the NJDEP, data from all the sites was treated together and is reported here. Table I lists the sites and the span of time over which they were regularly sampled.

TABLE I
SAMPLING SITES AND DATES

Jan-Dec, 1979 New Jersey	Jan-Dec, 1980 New Jersey	Jan-June, 1981 New York
Rutherford	Rutherford	Travis
Pine Barrens	Pine Barrens	Mariner's Harbor
South Amboy		Yorkville
Elizabeth		
Newark		
Camden		

Rutherford was first brought to the attention of the NJDEP because of what seemed to be an unusual concentration of cancer cases, especially children's leukemia, in the area around Pierrepont School, a local grammar school. Since some sampling had been done in 1978, it was decided that continued sampling at that location would be valuable. Rutherford has a rather unique combination of large chemical industries surrounding long-established, quiet, tree-lined residential neighborhoods. In addition, local residents were eager to cooperate in establishing secure and accessible sampling locations and helping with the servicing of the sampling sites when necessary. Samples were collected at ground level in the rear yard of a private house on Pierrepont Ave., within a block of the school, during 1979. In 1980 the site was moved to a similar location just across the street.

Batsto Village was selected as it is in an area which is little impacted by either industrial emissions or by automobile traffic. In this area, also, the cooperation of local residents was helpful. This restored colonial village is located in a state forest preserve and is about as isolated an area as exists in the state of New Jersey. This site and Rutherford were sampled for approximately two continuous years. The samples were taken from a second story window in the sawmill building during 1979, and the site was moved to the yard of a private residence approximately one mile from the first location, in 1980.

A shorter study of six months duration was carried out at two sites in Staten Island, the communities of Travis, and Mariner's Harbor, and in Manhattan in the Yorkville section. These were selected to see if sufficient differences could be determined in the pattern and concentration of the pollutants to show the impact of the New Jersey industrial areas bordering the Arthur Kill, on the residential areas of Staten Island. The samples were taken in the yard of a private house near the corner of Victory Blvd. and Roswell Ave. in Travis and on the grounds of St. Michael's Church in Mariner's Harbor. Six additional samples were taken on the grounds of the Consolidated Edison generating plant near the Travis site in September. The Manhattan site was chosen to give a basis of comparison, since it is further north, and out of the prevailing wind stream from the industrial areas in question. The locations of all the sites sampled during the project are displayed on the map in Figure 1, and more detailed maps of the sampling sites are in Appendix I.

The other sites reported here which were sampled for the NJDEP included densely populated urban areas in Newark and Camden, a site in Elizabeth which was subjected to both heavy automobile traffic and to petrochemical industry, and a site at the southern end of the industrial belt of the state, in South Amboy.

SELECTION OF COMPOUNDS FOR ANALYSIS

The list of compounds targeted for quantitative analysis changed several times during the project. The initial list consisted of 21 compounds, including several one and two carbon halogenated compounds, benzene, and a group of substituted benzenes. Two ketones were also included. The compounds were selected on the basis of their toxicity, their volatility, and their widespread use in industry. Over the course of the project some compounds were dropped from the list because they so seldom detected, and others because of analytical problems. Chloroprene data reported during the first year has recently been found to be invalid due to an error in the reagent used for calibration. After many samples had been analyzed by GC/MS, a group of six compounds were added because they were seen in samples and were well resolved in the chromatogram. In the third year of the project, two more compounds were added as there was a specific request for data on these by the granting agency. Table II gives the list of compounds and notes the general time that these were being determined.

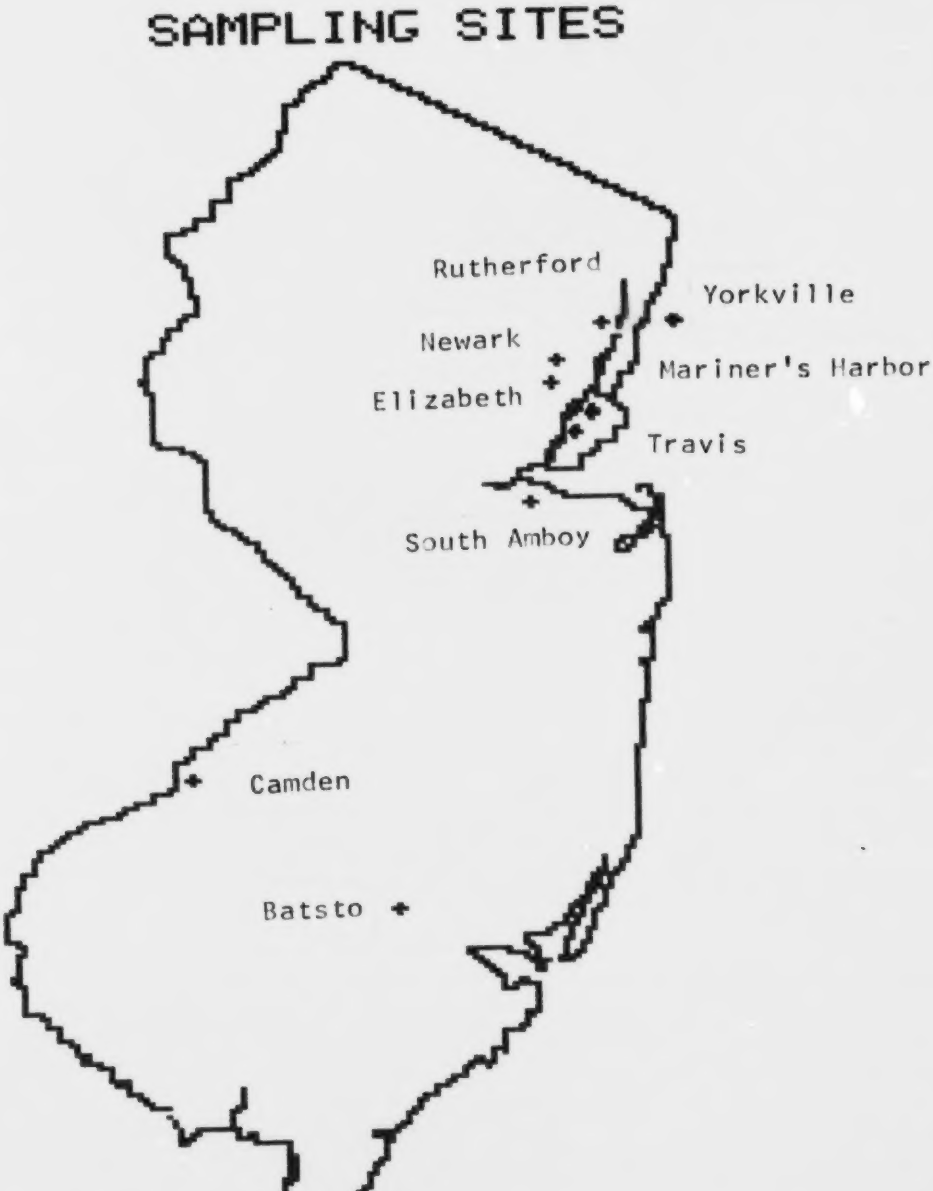

SAMPLING SITES
Rutherford
Yorkville
Newark
Mariner's Harbor
Elizabeth
Travis
South Amboy
Camden
Batsto

Figure 1.

TABLE II

COMPOUNDS ANALYZED DURING THE PROJECT

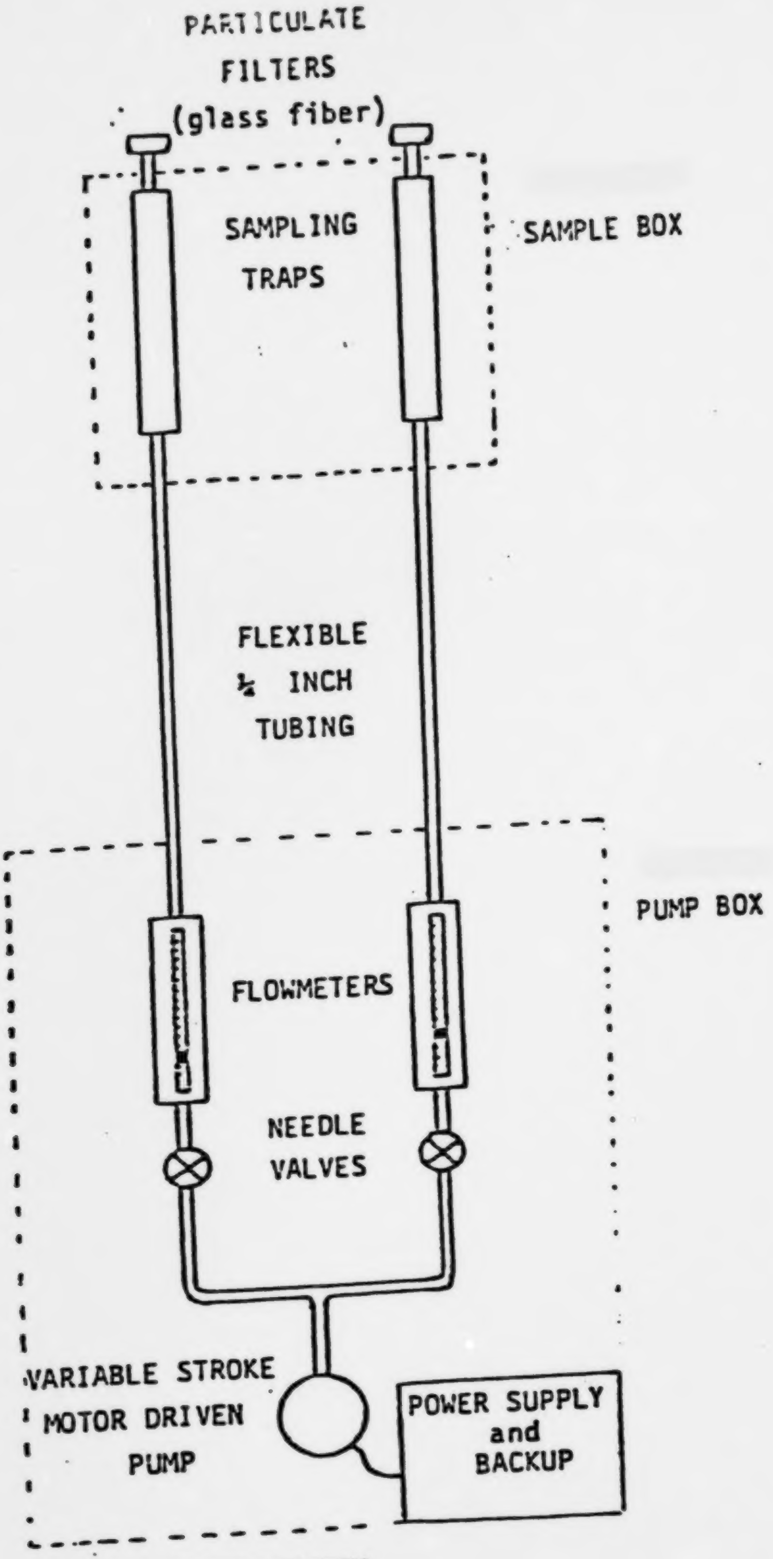
	1979	1980	1981
Vinyl chloride	x	x	x
1,1-Dichloroethylene	x	x	x
Chloroform	x	x	x
1,2-Dichloroethane	x		x
Methylene chloride			x
Carbon tetrachloride	x	x	x
Trichloroethylene	x	x	x
1,1,2-Trichloroethane	x	x	x
1,2-Dibromoethane	x	x	x
Tetrachloroethylene	x	x	x
1,1,2,2-Tetrachloroethane	x	x	x
Methyl ethyl ketone	x		
Methyl isobutyl ketone	x		
Acrylonitrile			x
p-Dioxane	x		x
Benzene	x	x	x
Chlorobenzene	x	x	x
Toluene	x	x	x
m-Xylene	x	x	x
P-Xylene	x	x	x
o-Xylene	x	x	x
Nitrobenzene	x	x	x
Styrene	x	x	x
p-Dichlorobenzene		x	x
o-Dichlorobenzene		x	x
p-Chlorotoluene		x	x
o-Chlorotoluene		x	x
Ethylbenzene		x	x

SAMPLING METHODOLOGY

Samples were generally collected every sixth day in order to obtain a near-weekly sample and to distribute the samples over all the days of the week. Samples were taken using the apparatus diagrammed in Figure 2. The pumps, Model AS100 or AS300, supplied by Spectrex Corp. were powered by rechargeable 6V batteries, when line power was not available, and by 6V DC power supplies when line current was available. Flows were controlled by varying the pump speed, and by inlet restricting valves on the pumps. Flows were monitored by calibrated rotameters, and checked against soap film flow meters and wet test meters at regular intervals.

SAMPLE COLLECTION

Samples are collected over a twenty four hour period, by drawing the air to be analyzed through the traps at a flow of 10


PARTICULATE
FILTERS
(glass fiber)
SAMPLING
TRAPS
SAMPLE BOX
FLEXIBLE
¼ INCH
TUBING
PUMP BOX
FLOWMETERS
NEEDLE
VALVES
VARIABLE STROKE
MOTOR DRIVEN
PUMP
POWER SUPPLY
and
BACKUP

VAPOR SAMPLING SYSTEM

Fig. 2

to 15 ml/min. Each pump can draw air through two sampling lines, allowing for the collection of replicate samples or for the use of two types of traps for improved retention. Usually, a Tenax trap is used for trapping the majority of the sample compounds, as it has been shown to readily absorb and release these materials.(2,3) Spherocarb is used to trap the most volatile materials, especially vinyl chloride, which breaks through a Tenax trap after only a few liters of air have been collected. The efficiency of Tenax porous polymer for collection of trace organic vapors, the recovery of these vapors and the breakthrough characteristics of the traps are discussed in a subsequent section of this report. The flows in each channel of the pumping system are monitored by calibrated rotameters, and adjusted with needle valves.

To prevent particulate matter from being drawn into the traps, a glass fiber filter is placed before each trap. This filter is impregnated with sodium thiosulfate to decompose any ozone which is present, thus avoiding the oxidation of the Tenax, and minimizing the formation of artifacts. Thiosulfate coated filters have been tested for this purpose(4) and have proven to reduce the ozone interference without removing organic vapors.

PREPARATION OF TENAX TRAPS

The 60/80 mesh Tenax used in the sample collection traps is exhaustively extracted in order to remove any volatile fractions remaining in the polymer. Sixteen hour Soxhlet extractions with acetone, cyclohexane and methanol, consecutively, are followed by vacuum drying at 120° C. This treatment removes noticeable quantities of viscous liquid material from the Tenax. The sorbent is packed into traps fabricated of 1/4 in. (0.64 cm) stainless steel tubing fitted with compression connectors at each end for attachment to the sampling and desorption equipment. The traps are 15 cm. in length and have an internal diameter of 0.53 cm. The packing is retained in the trap with plugs of silanized glass wool, and each contains 0.4 grams of Tenax.

After packing, the traps are attached to a manifold and heated to 300°, with a purge of nitrogen flowing at 30 ml/min through each trap. This initial conditioning requires approximately 3 days to remove the extraction solvents completely, but subsequent reconditioning after use is complete in 8 hours. Completeness of conditioning is assured by desorbing a trap from each manifold batch and analyzing the effluent in the same manner as a sample. After conditioning, the traps are sealed with caps attached to the compression fittings and stored in individual glass culture tubes with Teflon lined screw caps. Glass wool packing is used to cushion each trap. The culture tubes and glass wool are baked to 150° before use to remove adsorbed organics which might contaminate the traps, and the screw caps are boiled in distilled water to eliminate the toluene contamination which arose from them.

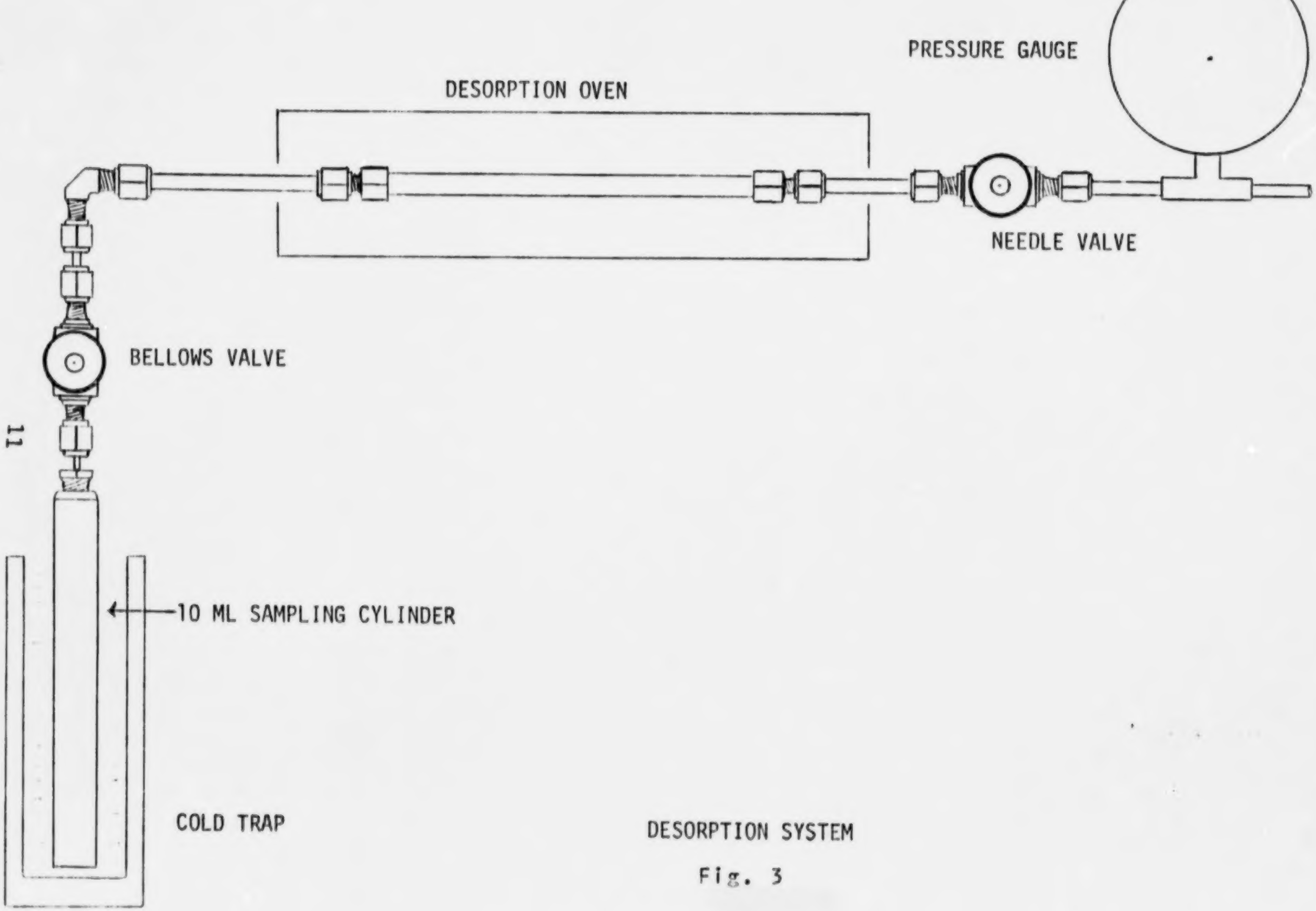
Storage tests showed little contamination after room temperature storage of up to three weeks. Some benzene and toluene was usually apparant in the blanks, but only at levels less than 1% of the quantity usually found in the atmosphere. After use for collection and desorption of a sample, a trap is reconditioned for further use. The Tenax shows no signs of reduced trapping capacity with use, but after 20-30 cycles the compression fittings wear and begin to leak. At that point the traps are emptied, the Tenax is sieved to recover the original mesh size, and is again subjected to the solvent extraction process to remove any residual sample material or polymer breakdown products which have accumulated. The Tenax is then repacked into new traps. The development of channels in the packing is prevented by this regular repacking of the traps.

PREPARATION OF SPHEROCARB TRAPS

Spherocarb traps are prepared from the same tubing and fittings as the Tenax traps. Since this packing is more dense, 0.40 gram occupies only approximately one inch of the trap's length. This provides a sufficient trapping length since Spherocarb is much more retentive of sample gases. The packing is retained with quartz wool, rather than glass, as it was found that the glass wool became friable after being subjected to the higher temperatures used for Spherocarb desorption and conditioning. The traps are initially cleaned by subjecting them to a purge of distilled water steam for a period of several hours. After this, and after each use, the traps are purged with nitrogen at 400° C for three hours or more. Traps are sealed and stored in glass culture tubes in the same manner as the Tenax.

SAMPLE DESORPTION

Many of the previously published methods for thermal desorption of adsorbent traps allow only a single analysis to be performed on each sample. However, it is desirable to be able to run more than one analysis of a particular sample, in order to determine the precision of the method, to analyze samples which are spiked with a known mixture for positive peak assignments, or to run samples on the GC/MS for qualitative confirmation and analysis of co-eluting species. A desorption system has therefore been developed which permits taking several aliquots from each sample. This system, diagrammed in Figure 3, consists of a small oven, fabricated in our machine shop from a cylinder of aluminum and heated with two 400 watt cartridge heaters. This oven fits closely around the traps. A 1 liter dewar flask filled with methanol and chilled to -60° C with a refrigerated probe serves as a cold bath. A 10 ml stainless steel gas cylinder fitted with a stainless steel bellows valve, and an accurate gauge for measuring the pressure complete the system. The sample holding cylinder is cleaned by polishing the interior with a water slurry of carborundum grit, rinsing with acetone and methylene chloride, and treatment with hexamethyldisilazane. The silanizing agent is removed with methanol, and the cylinders are heated to 200° C, under vaccuum, before use. The technique of preparing silanized cylinders was not developed until after the sample analyses reported here were


PRESSURE GAUGE
DESORPTION OVEN
NEEDLE VALVE
BELLOWS VALVE
10 ML SAMPLING CYLINDER
COLD TRAP

DESORPTION SYSTEM

Fig. 3

completed, and the loss of some compounds, especially carbon tetrachloride on the untreated steel surface accounts for the fact that the levels of carbon tetrachloride found in this study are lower than expected.

The sample trap, connected between the nitrogen inlet line and the inlet of the 10 ml sample container, is placed into the oven. The sample cylinder has been previously flushed with nitrogen and evacuated to below 1mm pressure. The cylinder is placed in the cold bath and the bellows valve is opened. The adsorbed sample is allowed to distill under reduced pressure into the chilled cylinder for 30 minutes. Then the nitrogen inlet valve is opened and any remaining sample is purged into the cylinder with sufficient gas to bring the final pressure to 60 PSIA. The bellows valve is closed and the cylinder assembly is transferred to a small heating mantle where it is warmed to 120° before injection into the gas chromatograph. There is adequate pressure in the cylinder to allow the injection of at least three samples.

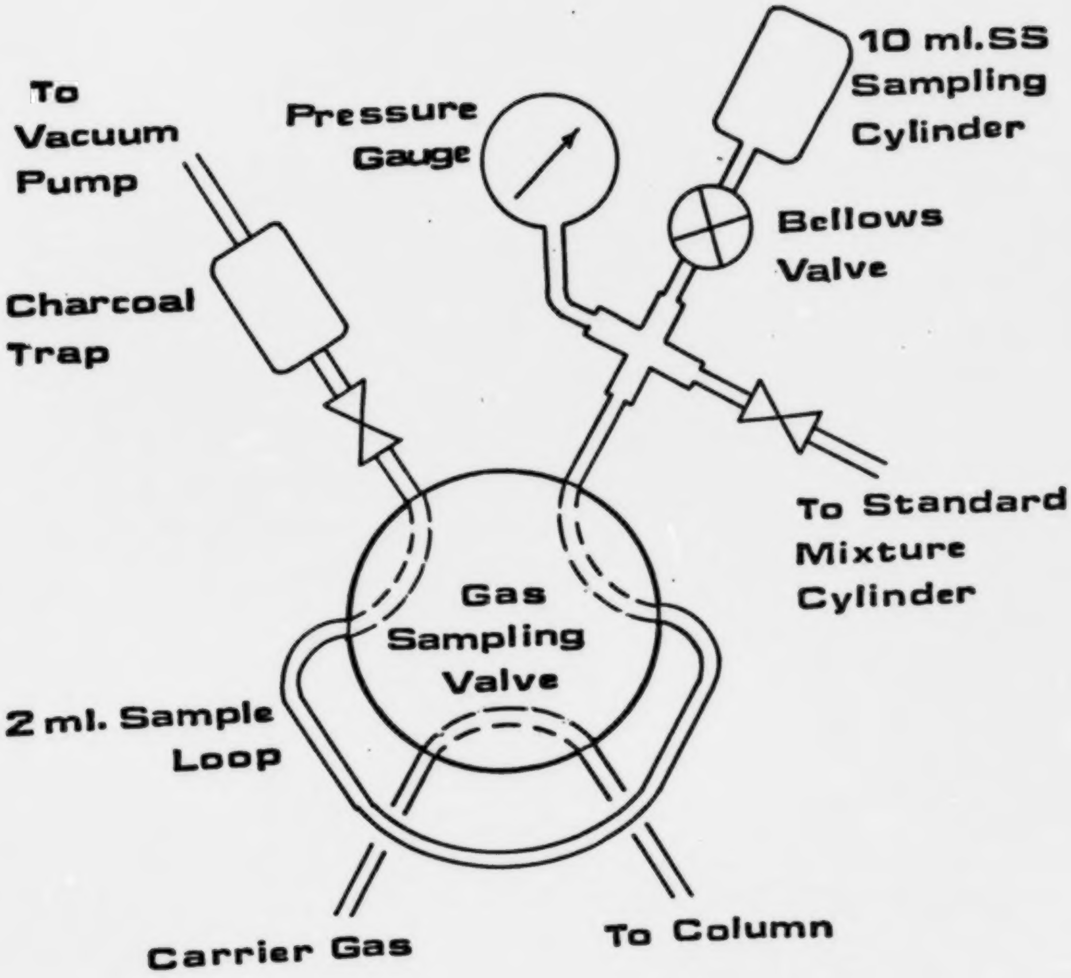
CHROMATOGRAPHIC ANALYSIS

The analysis is done on a Varian 3700 gas chromatograph. The injection system was replaced with a manifold which consists of a gas sampling valve having a 2 ml volume sample loop, a pressure gauge, and a vacuum line to evacuate the sample loop prior to filling to a measured pressure with sample. The gas sampling valve is held at 120° and all the exposed lines, through which sample or standard mixture pass, are heated with flexible tape to 60°. The column is connected directly to the gas sampling valve using a graphite ferrule. The inlet system is shown in Figure 4.

Several columns have been used for the separation. A support coated open tubular (SCOT) coated with SP2100 was initially chosen to provide the largest sample capacity. When it was determined that the column was not loaded to capacity, a wall coated column (WCOT) was substituted. Finally, in order to achieve the highest possible resolution, a fused silica SP2100 column, 50 meters in length was installed. This column has given superior separations and made it possible to reduce the number of connections in the sample stream, by attaching the head of the column directly to the sampling valve. Samples are run with helium carrier gas at a flow of 1.0 ml/min.

Since the 2 ml sample volume is large for a capillary column, the organic fraction is focused into a sharp plug at the head of the column by starting the temperature program at -90°. The temperature then rises to -4° in 1 minute, holds for 1 minute, and ramps at 3° per minute to 90°. The ramp then changes to 7° per minute up to 140°. The entire run takes 42 minutes. An alternate program, suitable for use on a GC which does not have subambient temperature programming capability, involves trapping the sample in a loop of fused silica tubing cooled with liquid nitrogen before the column, removing the cold trap, and programming the column from 40° to 140° at 3° per minute.

At the end of the column, nitrogen make-up gas is added to the sample at the rate of 30 ml/min to prevent peak broadening in


10 ml.SS Sampling Cylinder
To Vacuum Pump
Pressure Gauge
Bellows Valve
Charcoal Trap
To Standard Mixture Cylinder
Gas Sampling Valve
2 ml. Sample Loop
Carrier Gas
To Column

Gas Chromatograph Inlet System

Fig. 4

the detector. The detector signals are integrated and the sample concentrations are calculated using a Spectra-Physics Model 4000 multichannel integrator.

PREPARATION OF STANDARD GAS MIXTURE

Gaseous standards have been prepared which contain approximately 5 parts per million of each of the compounds being determined. A liquid mixture is gravimetrically prepared containing each target compound. Two tenths of a milliliter is injected through a septum into an evacuated 13 liter stainless steel high pressure gas cylinder. The fitting behind the septum is warmed to insure rapid evaporation of the mixture. The cylinder is then pressurized to 1000 PSI with pure helium. The cylinder is kept warm and allowed to equilibrate for two days, and the mixture is then analyzed for benzene against an NBS traceable benzene standard mixture, supplied by Matheson Gas Co. The determined concentration of benzene in the cylinder and the known mole fractions of the other compounds in the original concentrate enables the calculation of the other concentrations. The concentrations of the compounds in the gas mixture are stable, and show good reproducibility if the cylinder is kept heated to 60^{o}. When standard is drawn from a room temperature cylinder, the less volatile compounds, especially nitrobenzene and the dichlorobenzenes show reduced concentrations, indicating some adsorption of these on the cylinder walls. These losses may be as high as 50% if heating is neglected. Some compounds, notably ketones, which have been tested showed a tendency to decline in concentration over a period of several weeks, probably due to reactions on the cylinder walls. Therefore, it is necessary to check the stability of each compound added to the mixture.

It was found that there were problems associated with the use of the vapor phase standard. It is difficult to make reproducible injections of the standard for some of the compounds. Passage of the vapor through tubing has the effect of removing some of the compounds from the stream. In addition there may be problems of changing concentrations due to diffusion effects which take place when a mixture of gases flows down a tube. Therefore a new system of quantitative calibration was developed.

Relative response factors are developed for each target compound on the FID detector by the following method. Standard mixtures are gravimetrically prepared from reagent grade liquids diluted in phenyl ether solvent. Compounds which are not completely separated in the chromatogram are prepared in separate mixtures, to avoid integration errors. Injections of 0.05 microliter of the liquid standards onto the GC column are made and the response ratios of the target compounds, normalized to benzene with a response of 1.0, are calculated. These are determined from the area generated from each compound, relative to the benzene area. The gas phase benzene standard is run daily on the chromatograph to generate a benzene calibration factor. Each response ratio is multiplied by this daily factor to give a calibration factor for each compound. The calculations are outlined in the following equations:

$$\text{Concentration(I)}_{\text{sample}} = \text{Area(I)}_{\text{sample}} \times \text{RRF} \times \text{Benzene Factor}$$

Where:

$$\text{RRF} = (X_i/X_b)/\ (\text{Area}_B/\ \text{Area}_i) \quad \text{\{Determined from liquid inject\}}$$

X_i = Mole fraction of i in liquid mixture
X_b = Mole fraction of Benzene in liquid mixture

$$\text{Benzene Factor} = \frac{\text{Conc Benzene gas standard}}{\text{Area Benzene gas standard}}$$

{Determined by daily calibration}

The average relative response factors, with their standard deviations are shown in Table III.

CALIBRATION OF THE CHROMATOGRAPH

Before analysis of Tenax samples, a 10 ppm gaseous benzene standard is run. This is within an order of magnitude of the concentration of the desorbed samples, and well within the linear range of the FID. The calibration factor is compared with the running average and entered on the control chart, a portion of which is shown in Figure 5. If the value is out of control limits, the run is repeated, after the flows of air and hydrogen to the detector have been checked, and readjusted if necessary. The running average is updated, and the benzene factor is entered into the computing integrator as a factor to multiply each peak area. The relative response factors for the individual compounds are permanently stored in the computer analysis file. The mixed gas standard is used to update retention times, The quantities of the halogenated compounds found by this method are used to calibrate the ECD.

The quantitative vinyl chloride standard, supplied by Scott Specialty Gases, is run on the GC before Spherocarb samples are run, to determine both the retention time and the quantitative response.

TRAPPING AND RECOVERY EFFICIENCY

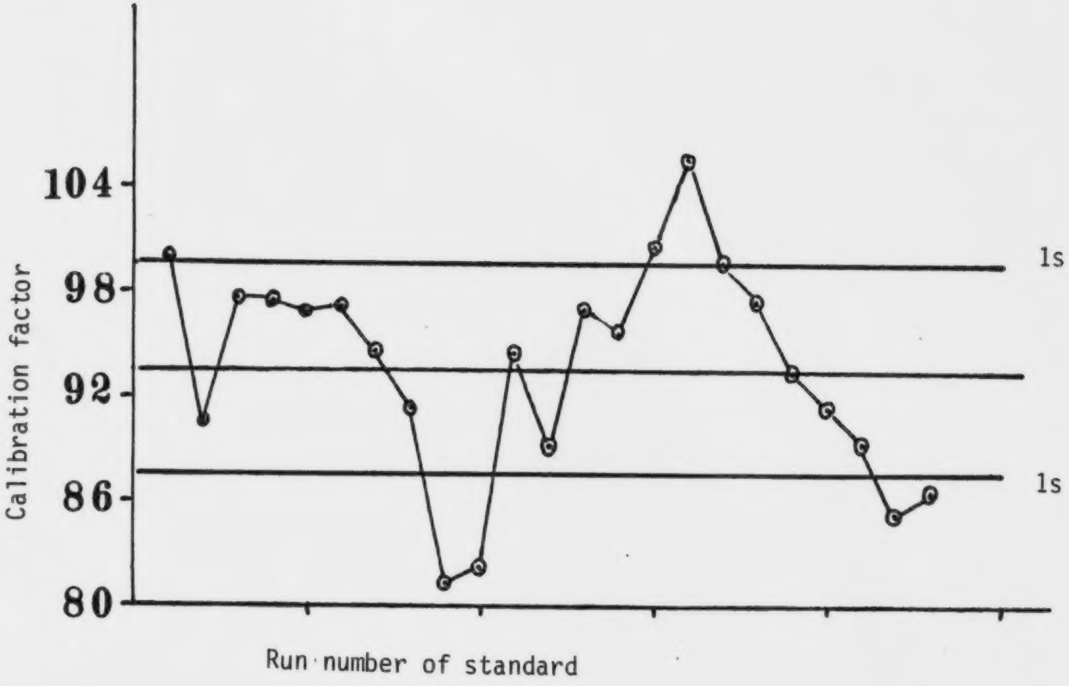
The overall efficiency of the system for collection of the sample, recovery, and analysis has been tested in a series of experiments. A stream of nitrogen is passed through a Tenax trap at the usual air sampling rate of 10 to 15 ml/min, and 2 ml portions of standard gas mixture are injected into the stream at intervals. When an amount of sample similar to that collected in an air sample has been loaded, the trap is removed, stored for a length of time comparable to storage of actual samples, and anal-

TABLE III

GAS CHROMATOGRAPHIC RESPONSE FACTORS

	Factors relative to benzene molar response
Vinylidene chloride	4.55
Methylene Chloride	9.55
Chloroform	7.96
1,2-Dichloroethane	3.82
Benzene	1.00
Carbon tetrachloride	7.96
Trichloroethylene	3.13
Dioxane	1.56
1,1,2-Trichloroethane	2.56
Toluene	0.935
1,2-Dibromoethane	2.38
Tetrachloroethylene	2.78
Chlorobenzene	0.833
Ethylbenzene	0.690
m-Xylene	0.699
p-Xylene	0.699
o-Xylene	0.581
Styrene	0.787
1,1,2,2-Tetrachloroethane	2.63
o-Chlorotoluene	0.787
p-Chlorotoluene	0.901
p-Dichlorobenzene	0.870
o-Dichlorobenzene	0.840
Nitrobenzene	0.971

Factors were determined by injection of liquid, gravimetrically prepared mixtures. The relative standard deviation of the replicate determinations was 7.6%.



Benzene Control

Fig. 5

yzed as a sample. The results of this study is summarized in Table IV. While this method does not distinguish between trapping efficiency and desorption efficiency, some mechanisms of sample loss can be proposed. Carbon tetrachloride, 1,1,2,2-tetrachloroethane, 1,1-dichloroethylene do not appear to be efficiently trapped by Tenax, and there is some evidence that there is loss of these compounds as they pass through the stainless steel delivery lines. The sample holding cylinders also appear to cause loss of these compounds. The recovery of nitrobenzene is also low due to the difficulty of removing it completely from the Tenax.

The completeness of desorption obtained using the apparatus described, has been verified by putting traps loaded with standard through the desorption process twice in succession. The second desorption showed a maximum of only 9% of the amount of any compound found in the first desorption, for six replicate traps loaded with quantities comparable to those found in ambient samples.

IDENTIFICATION OF PEAKS IN THE CHROMATOGRAM

A spiking method was developed to aid in the identification of peaks in the complex chromatograms obtained from the air samples. After the sample concentrate is analyzed, the sample remaining in the 10 ml cylinder is spiked with a small quantity of the standard mixture and is then rechromatographed. The increase in peak height or the appearance of new peaks locates the compounds of interest. Spiked samples are run at regular intervals, especially when the sampling location is changed. Within an area, compound peaks vary in size from day to day,but the general pattern of substances present changes very little. Two typical chromatograms of air samples done on the glass and fused silica columns are shown in Figure 6.

The high resolution of the chromatography makes co-eluting peaks uncommon, but when they do occur, the method cannot distinguish them. Mass spectrometry is the most viable answer to that problem, and GC/MS analysis is performed on samples at regular intervals. The GC and GC/MS have shown very good agreement on the qualitative analysis, and no species were observed to interfere with the target compounds in field samples.

MASS SPECTRAL ANALYSIS

Analysis to confirm the identities of the peaks as assigned from the GC system are performed on a Varian MAT 44 quadrapole mass spectrometer. Approximately 5% of the total number of samples were analyzed by GC/MS. This analysis provided qualitative verification of the target pollutants and identified other volatile organic species which were present in the atmosphere of the sampling sites at levels above 0.1 ppb. GC/MS analysis of Tenax-adsorbed samples is capable of verification of all target compounds, including vinyl chloride. Mass spectral analysis of Spherocarb samples qualitatively identifies vinyl chloride,

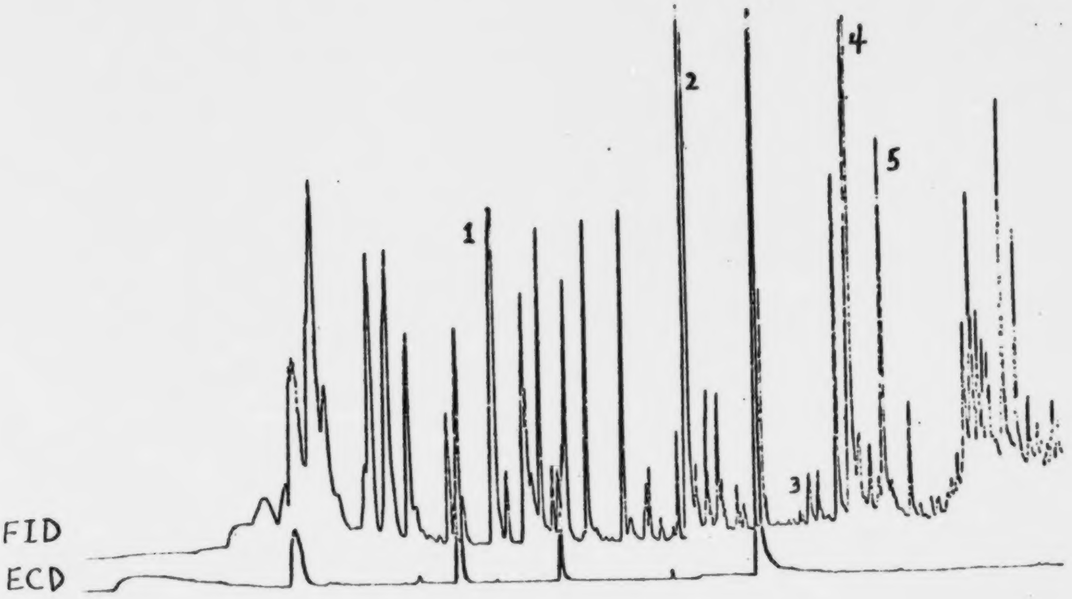
Table IV

Fraction of Loaded Material Recovered From Tenax Traps.

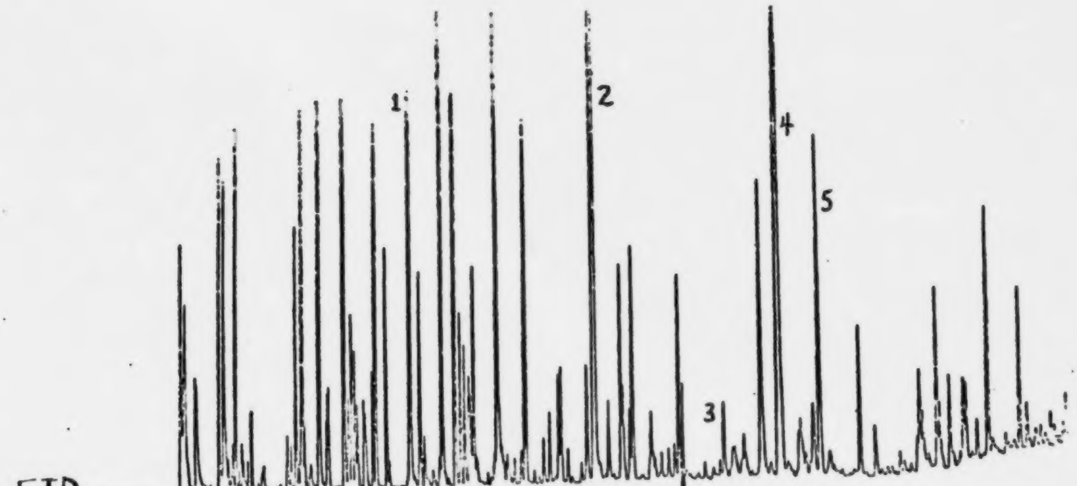
Chloroform	0.71
Carbon tetrachloride	0.39
1,2-Dichloroethane	0.78
1,1,2-Trichloroethane	0.88
1,2-Dibromoethane	0.84
1,1,2,2 - Tetrachloroethane	0.48
Vinyl Chloride	1.0*
Trichloroethyene	1.0
Tetrachloroethylene	1.0
1,1-Dichloroethylene	0.40
Benzene	0.86
Toluene	0.95
Chlorobenzene	1.0
o-Xylene	0.97
m & p-Xylene	0.93
Nitrobenzene	0.52

*from Spherocarb

Fig. 6. Glass capillary column, 50 meters, SP 2100 methyl silicone coating. Numbered peaks are: 1. benzene, 2. toluene, 3. chlorobenzene, 4. m- and p-xylenes, 5. o-xylene. The upper trace is the response from a flame ionization detector (FID), the lower from an electron capture detector (ECD).



Fused silica column, 50 meters, SP 2100. Peaks are identified as above.



vinylidene chloride (1,1-dichloroethylene), methylene chloride, chloroform, 1,2-dichloroethane, trichloroethylene and benzene.

GC/MS analysis is accomplished by use of an identical GC column to that used in the routine GC analysis and the temperature program is similar, except for the subambient section of the program. The sample is focused by use of a liquid nitrogen cold trap.

The sample cylinder containing the vapor concentrate from the desorbed sample is ready for GC/MS analysis after one aliquot has been withdrawn for GC analysis. At this point the 10 ml cylinder contains approximately 20 psig sample pressure. This is admitted to an evacuated 3 ml loop through a gas sampling valve and connection line, heated to 100° C. The sample is injected onto the column and is cryogenically focused in a 10 cm length of 0.2 mm ID fused silica tubing held at -195° with liquid nitrogen.

The sample is retained in the liquid nitrogen trap for 10 minutes while the relatively large quantities of nitrogen and oxygen are flushed through the column. The cryoloop is then heated to room temperature to allow the sample plug to continue through the column. The column temperature program is then initiated. The column is held at 32° for six minutes and the temperature is then raised at 4° per minute to a final temperature of 145°. The final temperature is held for 10 minutes, before ending the analysis.

The mass spectral analysis does not clearly distinguish between isomers such as o-and p-dichlorobenzene and o- and p-chlorotoluene. These species are, however, separated by the GC/MS in the fused silica capillary column and, therefore, when both of the isomers are present in a sample, two distinct peaks with the same mass spectral characteristics are observed. Highly volatile species such as vinyl chloride or acrylonitrile are not as easily resolved by the GC/MS as by the GC used for routine analyses, since the GC/MS does not have the subambient temperature program which allows better resolution of the lighter compounds. A larger number of species, including C_1 to C_3 hydrocarbons, therefore elute in a short period of time at the very beginning of the GC/MS chromatogram. One somewhat saving aspect is that the chlorocarbons and acrylonitrile have distinct chlorine tags or parent peaks separated from the hydrocarbon background, which can be observed if higher than trace levels are present. Analysis of acrylonitrile in the standard indicates that concentrations of 0.5 to 1.0 ppb and higher in a sample should be readily observable on the GC/MS. This leads to the conclusion that acrylonitrile is not present above these levels in the majority of the samples analyzed by GC/MS in this study, or that it is not well retained by Tenax. Acrylonitrile was observed in samples taken at the Travis site, but the levels appeared to be just at the detection limit.

Vinyl chloride and vinylidene chloride, which also elute in this area of the chromatogram, have the unique mass spectral tag of a chlorine attached to a hydrocarbon chain, and can be more readily observed when present in low quantities. Vinylidene chloride was observed frequently in the mass spectral analysis as it is reported in the routine GC analyses. It appears that the levels observed on the mass spectral analysis were lower than those reported in some of the GC analyses. Perhaps a coeluting peak complicates the GC analysis of this compound.

All other volatile organic compounds routinely observed by GC were also regularly seen on the GC/MS analyses. These compounds appear to elute without interferences in the capillary GC/MS analysis. Tables V, VI and VII list the target compounds and other compounds observed in the GC/MS analysis, grouped by the frequency with which they appear in samples.

A large number of the compounds trapped from the samples are unsubstituted alkanes and alkenes, branched and straight chain, including hydrocarbons from butanes through dodecanes. For example, Table VIII lists the C_6 hydrocarbons which are routinely observed in the GC/MS analysis of Tenax samples.

BREAKTHROUGH STUDY

A separate study was carried out to assess the trapping efficiency of Tenax toward some of the pollutants measured in this project. An attempt was made to challenge the adsorbent with volumes of sample and diluent comparable to those found in actual samples, and to develop data on the occurrance of breakthrough under differing conditions of flow, temperature and concentration.

Liquid Injection Experiments

The studies were done with a Varian 3700 gas chromatograph equipped with a flame ionization detector and temperature programming module. The trap under study was mounted as the column in the GC oven. Nitrogen was used as the carrier gas and was consistently maintained at a known flow rate (30 + 0.2 ml/min). The hydrogen and air flows to the flame ionization detector were maintained at 30 ml/min and 300 ml/min respectively. The gases were further purified by passing them through combination activated charcoal/ molecular sieve traps and all flow rates were periodically checked using a soap film flow meter and timer. Four organic compounds used in the study were methylene chloride, chloroform, carbon tetrachloride, and benzene. The Tenax GC was packed into cartridges of three different diameters and lengths. The size data for each cartridge is summarized in Table IX. Adsorption and retention data were obtained on each cartridge separately. The column was routinely conditioned with N_2 gas purge at 250°C for 16 hours after several days of runs. At such time, the cartridge was disconnected from the detector in order to prevent the contamination of the latter.

The injection port and the detector were maintained at a minimum of 50°C above the maximum oven temperature. This was done to prevent condensation of any of the compounds in either the injector or the detector. Injection was done by using a 0.5 microliter Hamilton syringe (groove in needle) and a low volume injection assembly. This placed the 0.05 microliter liquid sample of adsorbate in vapor form (0.06 ml of vapor in 30 ml/min of carrier gas) on the cartridge as a plug. The breakthrough and retention volumes were determined by monitoring the times of

Table V

COMPOUNDS OBSERVED BY MASS SPECTROMETRY IN MORE THAN 70% OF SAMPLES*

Butanes	(C_4H_{10})
Methylene chloride	
Chlorotrifluoromethane (Freon 13)	
Pentanes	(C_5H_{12})
Chloroform (Trace levels)	
Hexanes	(C_6H_{14})
Benzene	
Carbon tetrachloride (Trace levels)	
Heptanes	(C_7H_{16})
Trichlorethylene	
Toluene	
Octanes	(C_8H_{18})
Perchloroethylene (Tetrachlorethene)	
Ethylbenzene	
Xylenes	
Styrene (low levels)	
Nonanes	(C_9H_{20})
Trimethylbenzenes	
Propylbenzenes	
Chlorobenzenes	
Decanes	($C_{10}H_{22}$)
Diethyl benzenes	
Butylbenzenes	
Naphthalene (Low levels)	
Butenes	(C_4H_8)
Pentenes	(C_5H_{10})
Hexenes	(C_6H_{12})
Heptenes	(C_7H_{14})
Octenes	(C_8H_{16})
Nonenes	(C_9H_{18})
Decenes	($C_{10}H_{20}$)
Undecanes	($C_{11}H_{24}$)
Isobutylbenzene	
Ethyl-dimethylbenzenes	
Propyl-methylbenzenes	
Tetramethylbenzenes	

(Acetophenone and Benzaldehyde are also routinely found. These species are known to be breakdown products of Tenax, which may be occurring in the desorption cartridge.

---

* Samples desorbed from Tenax Adsorbent.

Table VI

COMPOUNDS OBSERVED BY MASS SPECTROMETRY IN 35-70% OF SAMPLES

Vinyl Choride (Trace Levels)

Chloroethane

Acetone

Methanol

Dichloroethylenes
(1,1 and 1,2)

Chlorobutanes

Chloropentanes

Chlorotoluenes

Trichloroethanes
(1,1,1 and 1,1,2)

Dichlorbenzenes (3 isomers)

Nitrobenzenes

Petanones

Hexanones

Freon 113
(Trifluorotrichloroethane)

Methyl ethyl ketone

Methyl isobutyl ketone

* Samples desorbed from Tenax Adsorbent.

Table VII

COMPOUNDS OBSERVED INFREQUENTLY BY MASS SPECTROMETRY*

Trichloroacetic Acid

Chloroethers (Chloroethyl ether and chloromethyl ether)

Bromomethane

Pyridines

1,2, Dibromoethane

Acrylonitrile

Dioxane (1,4)

Trichlorobenzene

* Samples desorbed from Tenax Adsorbent.

Table VIII

LISTING OF TYPICAL C_6 COMPOUNDS OBSERVED IN GC/MS ANALYSIS

2,2-dimethylbutane

2,3-dimethylbutane

2-Methylpentane

n-Hexane

Cyclohexane

4-Methyl-1-Pentene

2-Methyl-1-Pentene

4-Methyl-2-Pentene(2)

Hexene

3-Methyl-2-Petene(s)

Cyclohexene

Methylcyclopentene

* Samples desorbed from Tenax Adsorbent.

TABLE IX

Specifications of Sampling Cartridges

Cartridge #	1	2	3
O.D. (Inches)	1/8	1/4	3/8
I.D. (cm)	0.216	0.533	0.775
Packing length (cm)	21.0	12.2	6.2
Volume (cm^3)	0.769	2.682	2.922
Tenax GC density (bulk, g/cm^3)	0.143	0.144	0.150

initial elution (1.5 per cent of peak maximum) and peak maximum respectively. The volume of carrier gas transmitted in each case through the cartridge was calculated by multiplying the accurately known volumetric flow rate (ml/min) by the corresponding time (min). The normalized breakthrough volume (V_N) and retention volume (V_{N-max}) were calculated from the respective data, the known Tenax GC density, and the bulk volume of adsorbent in each cartridge. V_N is the initial elution volume/bulk adsorbent volume (ml carrier/ml adsorbent) and V_{N-max} is the carrier volume at peak maximum/bulk adsorbent volume (ml carrier/ml adsorbent).

Readings were taken with the Tenax GC cartridge maintained at various fixed temperatures usually within an overall temperature range of about 30°C. All temperatures were below 100°C and were chosen for optimum retention time, recorder response, and reasonable peakwidths (less than 2 min).

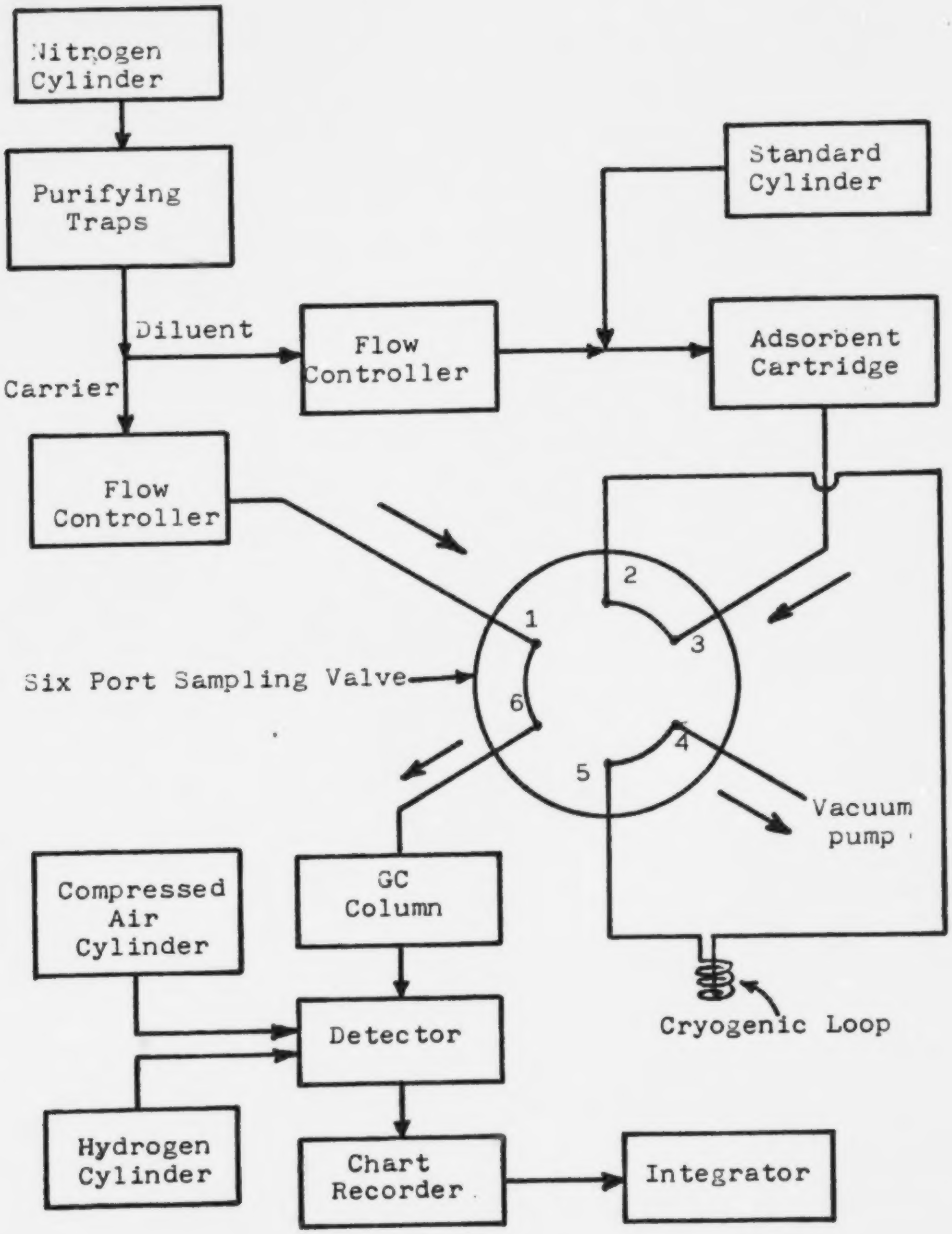
Cryogenic Loop Experiments

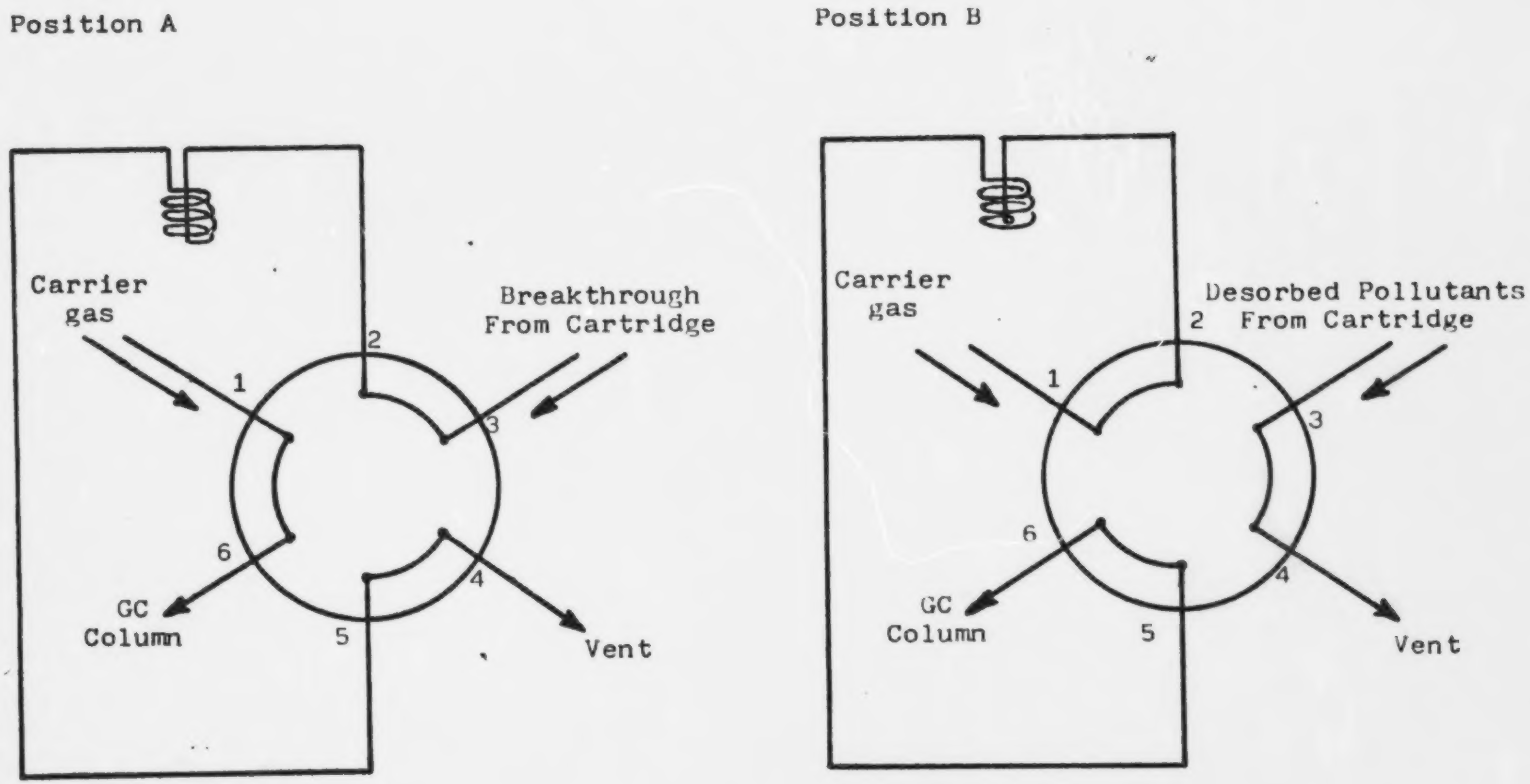
Substantial modification was done to the previous system in order to perform experiments using the cryogenic loop. Figure 7 presents a schematic diagram of the apparatus. The same gas chromatograph was used as in the previous experiments. The adsorbent cartridge was the 1/4" O.D. cartridge used in the liquid injection experiments. The GC column was a 10 meter long Carbowax 20M coated glass capillary column. A carrier gas flow rate of 1 ml/min was maintained through the GC column at all times and it was periodically conditioned at 155°C for at least one hour. The gas standard was prepared and stored in a 10 liter stainless steel cylinder as described above. Finally, the cylinder and its regulator were covered with heating tape and insulation so that they could be heated and maintained at a constant temperature of 60°C to limit adsorption in the system. The cylinder was then connected to the rest of the apparatus as shown in Figure 7.

The two positions of the six port valve are shown in Figure 8, detailing the connections operative in each position. Position A is the mode in which pollutants which break through the adsorbent cartridge are trapped in the cryogenic loop. At this time, the loop is immersed in a liquid N_2 bath and the adsorbent is maintained at ambient temperature (21°C). Diluent gas at 30 ml/min is allowed to flow through the cartridge while the vacuum pump is turned on. The gas standard is then allowed to bleed into the diluent gas stream at 2 ml/min so that a total of 32 ml/min of polluted diluent gas flows through the adsorbent cartridge. The concentrations of the individual compounds thus impinging on the adsorbent in the cartridge are given in Table X. The time is noted so that only a desired volume of gas is sampled. At this point the six port valve is switched to position B, the analysis-desorption mode. Simultaneously, the cryogenic loop is rapidly heated to 100°C and the GC oven temperature program is initiated. This performs the analysis on the contents of the loop.

The gas standard flow is shut off and the adsorbent cartridge is heated to 200°C so that the diluent gas flow acts to desorb the pollutants from it. The whole process of loading the cartridge,

Figure 7. Schematic Diagram of Cryogenic Loop System


Nitrogen Cylinder
Purifying Traps
Standard Cylinder
Diluent
Flow Controller
Adsorbent Cartridge
Carrier
Flow Controller
2
1
3
Six Port Sampling Valve
6
4
5
Vacuum pump
Compressed Air Cylinder
GC Column
Detector
Cryogenic Loop
Hydrogen Cylinder
Chart Recorder
Integrator


Position A
Carrier gas
Breakthrough From Cartridge
1
2
3
4
5
6
GC Column
Vent
Position B
Carrier gas
Desorbed Pollutants From Cartridge
1
2
3
4
5
6
GC Column
Vent

Trapping of pollutants

Analysis of pollutants

Figure 8. Positions of the Six Port Sampling Valve

TABLE X

Concentrations of Compounds Entering Adsorbent Cartridge

COMPOUND	CONCENTRATION (ppm)
Methylene chloride	0.924
Chloroform	0.564
Benzene	0.698
Carbon tetrachloride	0.581
Trichloroethylene	0.448
1,1,2,2-tetrachloroethane	0.396
Chlorobenzene	0.568
O-Xylene	0.361

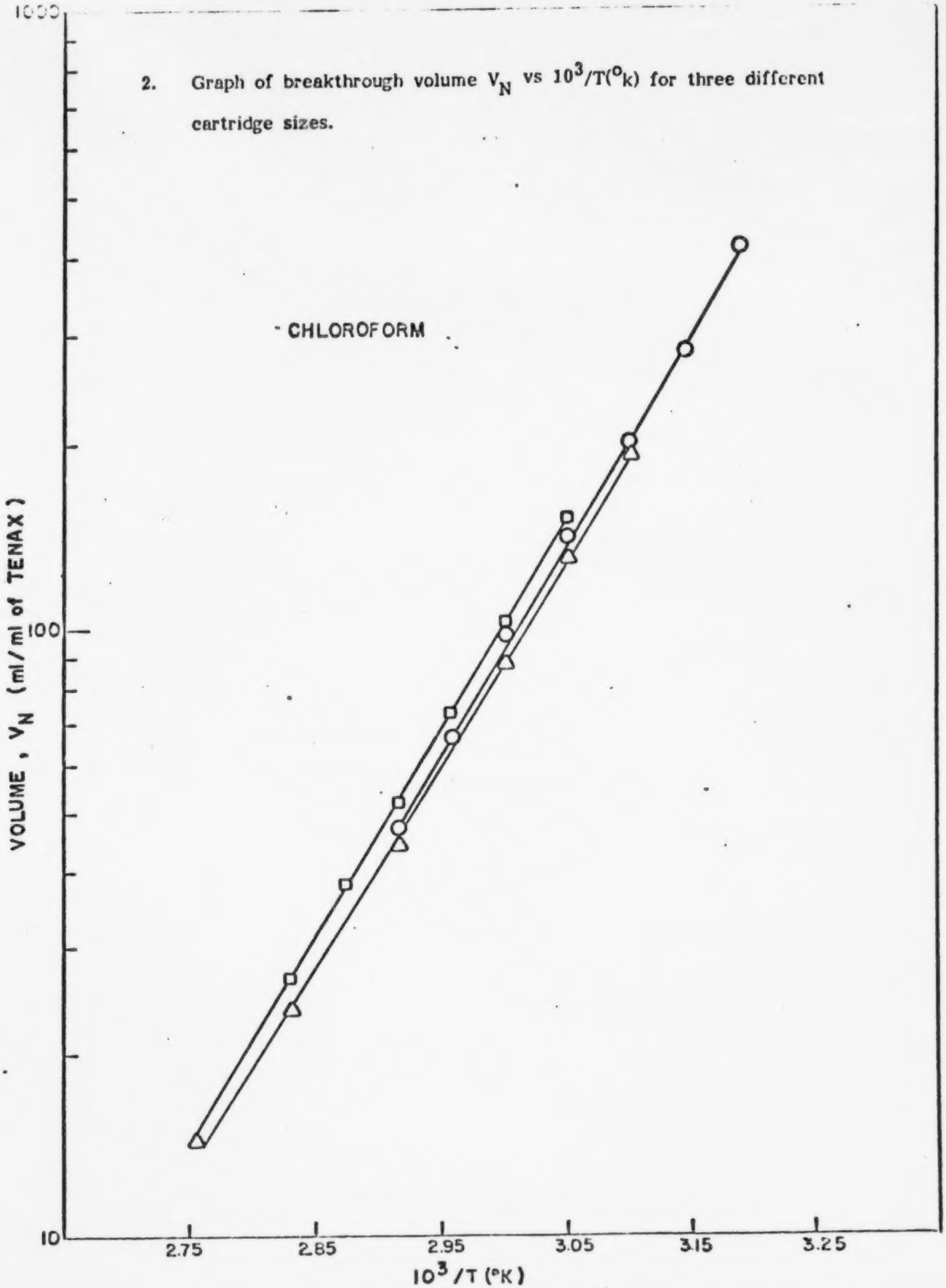
trapping the pollutants, analysing them, and desorbing the cartridge is repeated for different sampling volumes.

There are several differences between the system used in the present experiments and the one used in the initial liquid injection experiments. One liquid injection port was removed in order to accomodate the six port gas sampling valve which was then maintained at 120°C. A second injection port was converted to accomodate an aluminum heating block for desorbing the adsorbent cartridge. The original heating element of the injection assembly was replaced by two longer ones capable of maintaining a uniform temperature of 200°C throughout the block. The original thermocouple sensor was retained.

The carrier gas was changed from nitrogen to helium. This change was imperative because of the tendency of the nitrogen gas to liquefy in the cryogenic loop, giving rise to two problems. Firstly, it blocked the loop and caused discontinuity of gas flow. Secondly, the sudden vaporization and consequent expansion of the liquified N_2 in the loop during desorption made it impossible to deposit the pollutants onto the GC column as a concentrated plug. It resulted in a diffused mixture of N_2 and pollutants being presented for analysis which, in turn, made sharply defined chromatographic peaks impossible to obtain. It was also necessary to apply a slight vacuum (15 mm Hg, 745 mm Hg absolute pressure operation) at the vent line of the six port valve. This served to maintain a constant flow of helium diluent gas by counteracting any head loss in the line, and also prevented any N_2 impurity in the helium from condensing in the line. The diluent gas flow was monitored by using an on-line capillary flow meter. After the flows of diluent gas and gas standard were set using the respective needle valves, they were checked periodically using the capillary flow meter. All the lines through which the gas standard was allowed to flow were wrapped in heating tape and maintained at 60°C to limit adsorption in the lines. Blank runs were done (without any pollutant gas standard but with carrier gas flow) to check whether any pollutants from the carrier or prior runs were adsorbing on the inner walls of the lines. These pollutants were not found in concentrations large enough to interfere with the results of the experiment (less than 1% of the concentrations of the pollutants).

The log of the normalized breakthrough volume and the log of the normalized retention volume were plotted against $10^3/T^{\circ}K$ for each halocarbon and cartridge type. Typical breakthrough plots and retention plots are presented in Figures 9 and 10. Tables XI and XII summarize the breakthrough volumes and retention volumes (ml/ml of Tenax GC) of the compounds studied on the three cartridges for four representative temperatures. The data for 20°C were obtained by extrapolation of graphs.

The breakthrough volume per gram of Tenax GC, V_g, and retention volume per gram of Tenax GC, V_{g-max}, were calculated. In all cases a straight line was obtained with correlation coefficients greater than 0.996 for all data sets except V_N for benzene on the 1/8" cartridge. Relative agreement exists between the data of different cartridge sizes for each compound except that of carbon



2. Graph of breakthrough volume V_N vs $10^3/T(^\circ k)$ for three different cartridge sizes.

Figure 9

3. Graphs of retention volume $V_{N\text{-}max}$ vs $10^3/T(^{o}k)$ for three different cartridge sizes.

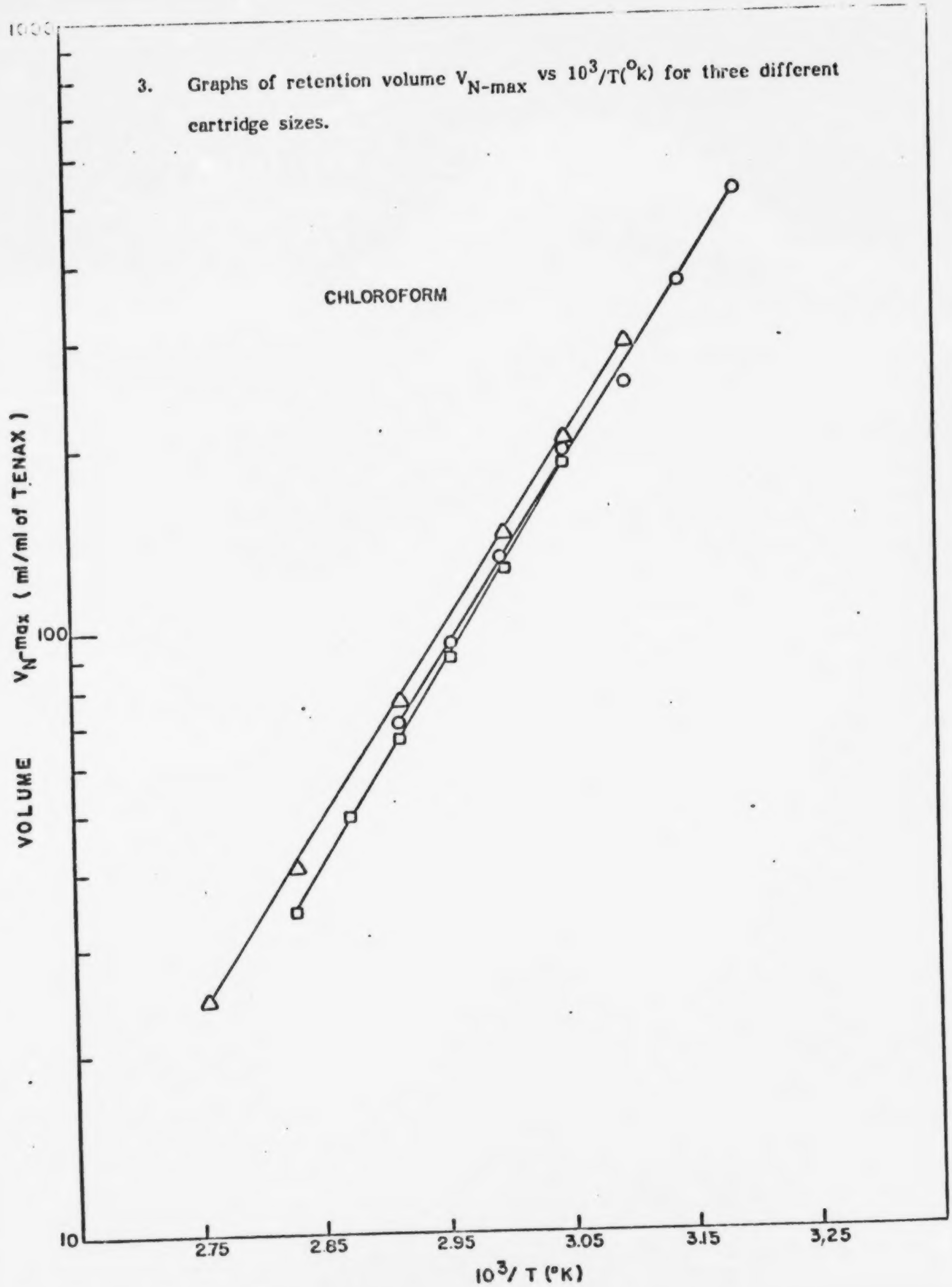


Figure 10

TABLE XI

Summary of Normalized Breakthrough Volumes (ml/ml Tenax GC)

	Cartridge Size		
	1/8"	1/4"	3/8"
Methylene chloride			
66°C	24.6	24.0	16.0
50°C	64.9	67.7	55.4
34.5°C	183.4	204.7	208.2
20°C	535.6	641.1	816.6
Chloroform			
66°C	62.7	68.6	61.0
50°C	194.4	215.8	186.1
34.5°C	651.0	733.8	613.6
20°C	2265.0	2594.0	2101.2
Carbon tetrachloride			
66°C	17.0	70.9	72.8
50°C	24.1	226.3	221.2
34.5°C	35.0	782.5	725.6
20°C	51.4	2814.4	2471.8
Benzene			
66°C	127.1	151.5	157.5
50°C	410.2	487.6	528.1
34.5°C	1433.7	1700.6	1923.4
20°C	5215.4	6172.0	7299.5

TABLE XII

Summary of Normalized Retention Volumes
(ml/ml Tenax GC)

	Cartridge Size		
	1/8"	1/4"	3/8"
Methylene chloride			
66°C	30.2	30.7	31.4
50°C	79.5	83.0	91.7
34.5°C	223.6	240.1	288.0
20°C	650.2	718.4	938.0
Chloroform			
66°C	89.6	87.3	99.2
50°C	257.4	266.0	284.9
34.5°C	795.2	874.8	879.8
20°C	2546.4	2989.0	2816.4
Carbon tetrachloride			
66°C	64.9	133.3	157.3
50°C	77.8	375.6	468.6
34.5°C	94.4	1136.4	1504.9
20°C	115.3	3562.0	5015.6
Benzene			
66°C	160.8	182.2	226.2
50°C	474.5	558.0	692.0
34.5°C	1508.4	1844.6	2285.1
20°C	4974.6	6335.5	7839.0

tetrachloride. The CCl_4 retention data for the 1/8" cartridge exhibits breakthrough and retention values appproximately 10 to 50 times lower than the corresponding 1/4" or 3/8" traps. The probable reason for this is a non-linear adsorption isotherm for CCl_4 on Tenax GC combined with a slow rate of adsorption under these conditions. Possible reasons for this anomaly will be discussed later in this section.

It is also interesting to point out the anomaly created by the extrapolation of the benzene, 1/8" cartridge data to 20°C, which yields a breakthrough volume larger than the retention volume. This, however, is well within the limits of experimental error. A comparison of the breakthrough and retention volume data with that of previous studies is presented in Tables XIII and XIV. The methylene chloride values agree with values obtained by Brown and Purnell(5) but lie approximately a factor of three higher than data reported by Bertoni et al.(6) The chloroform data, on the other hand, seems to be in agreement with both groups, Brown and Purnell(5) and Bertoni et al(6) and these $CHCl_3$ results also show the most constant pattern between the different cartridge sizes. Carbon tetrachloride again shows a very low capacity for the 1/8" column, data which was repeatedly obtained in multiple experiments. It is interesting to observe that the CCl_4 data of Vidal-Madjar et al(7) lie between the values obtained for the 1/8" and the 1/4 or 3/8" traps in this study. Vidal-Madjar's values, with the previous exception, consistently lie below the reported values for halocarbons on Tenax GC by approximately a factor of ten. The results of Brown and Purnell(5) on the other hand, appear approximately two times larger than those obtained in this study for CCl_4 on Tenax GC with the two larger traps.

The comparison of the breakthrough volumes for benzene on Tenax GC shows relatively good agreement with the values reported by Butler and Burke(1) for a 4" length column. While the retention volumes are an average of 25% below the values reported by both Gallant et al(8) and Brown and Purnell(5), they are in good agreement with data reported by Janak(9). These values are understandably lower than the maximum capacity per gram of Tenax GC reported by Butler and Burke(1) who used longer and more efficient columns.

Increase in cartridge diameter, corresponding to a decrease in linear velocity of adsorbate and carrier gas through the adsorbent, consistently shows an increase in retention capacity with the exception of chloroform. Brown and Purnell(5) found similar decreases in retention volume with increases in volume flow rates while Butler and Burke(1) reported no differences for capacities on longer, more efficient columns. Gallant et al(8) showed slight increases in retention volume at increased flows for three compounds on Tenax GC, but indicated that it was probably due to concentration decreases. Graphs of retention and breakthrough volumes per gram of Tenax GC versus carrier linear velocity are shown in Figures 11, 12 and 13 for the data obtained in this study as well as that of other workers where this velocity data could be obtained.

TABLE XIII

Comparison of Specific Breakthrough Volumes (ml/gm), 20°C

	Compound			
Source	Methylene chloride	Chloroform	Carbon tetra-chloride	Benzene
This study 1/8"	3746	15840	349	36514
This study 1/4"	4444	17994	19544	42869
This study 3/8"	5441	14015	16474	48675
Bertoni et al (6)	1381 ±100	15238 ±1429	---	---
Butler & Burke, 1/16"(1)	--	---	---	47424
Butler & Burke, 1/8"(1)	--	---	---	45000
Pellizzari et al (35)	3400	12300	10500	29600

TABLE XIV

Comparison of Specific Retention Volumes (ml/gm), 20°C

Source	Compound Methylene chloride	Chloroform	Carbon tetra-chloride	Benzene
This study 1/8"	4546	17842	810	34773
This study 1/4"	4976	20750	24744	43941
This study 3/8"	6254	18781	33402	52267
Brown & Purnell(5)	4000	19231	62000	62000
Butler & Burke, 1/16"(1)	--	---	---	83368[a]
Butler & Burke, 1/8"	--	---	---	79983
Tanaka(10)	--	25000	10000[b] & 1848[c]	---
Vidal-Madjar et al(7)	647	2470	4190	---
Gallant et al(8)	--	---	---	60900
Janak et al(9)	--	---	---	47000

---

[a] maximum obtainable.
[b] obtained by extrapolation of linear portion of graph.
[c] obtained by extrapolation of curved portion of graph.

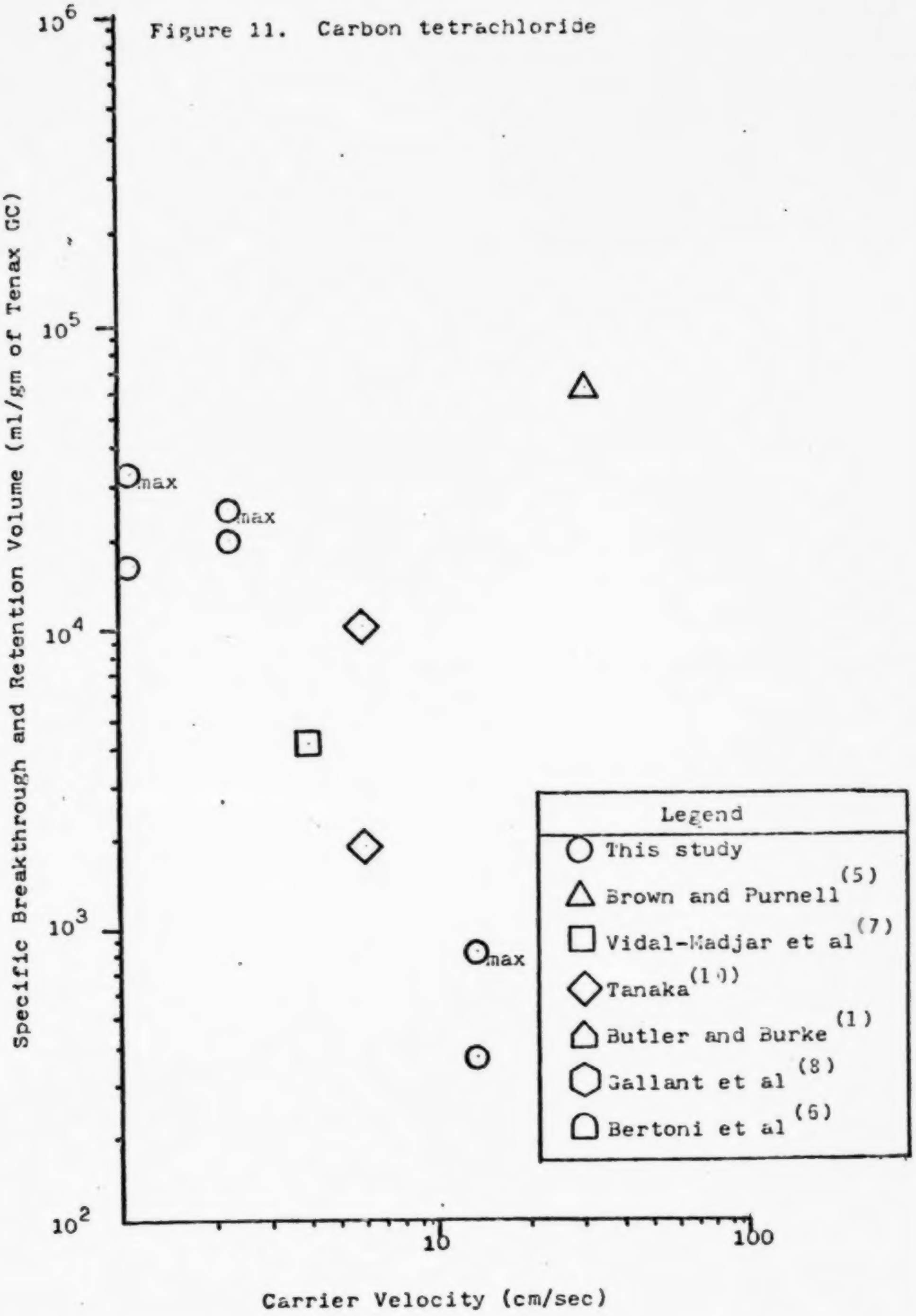


Figure 11. Carbon tetrachloride

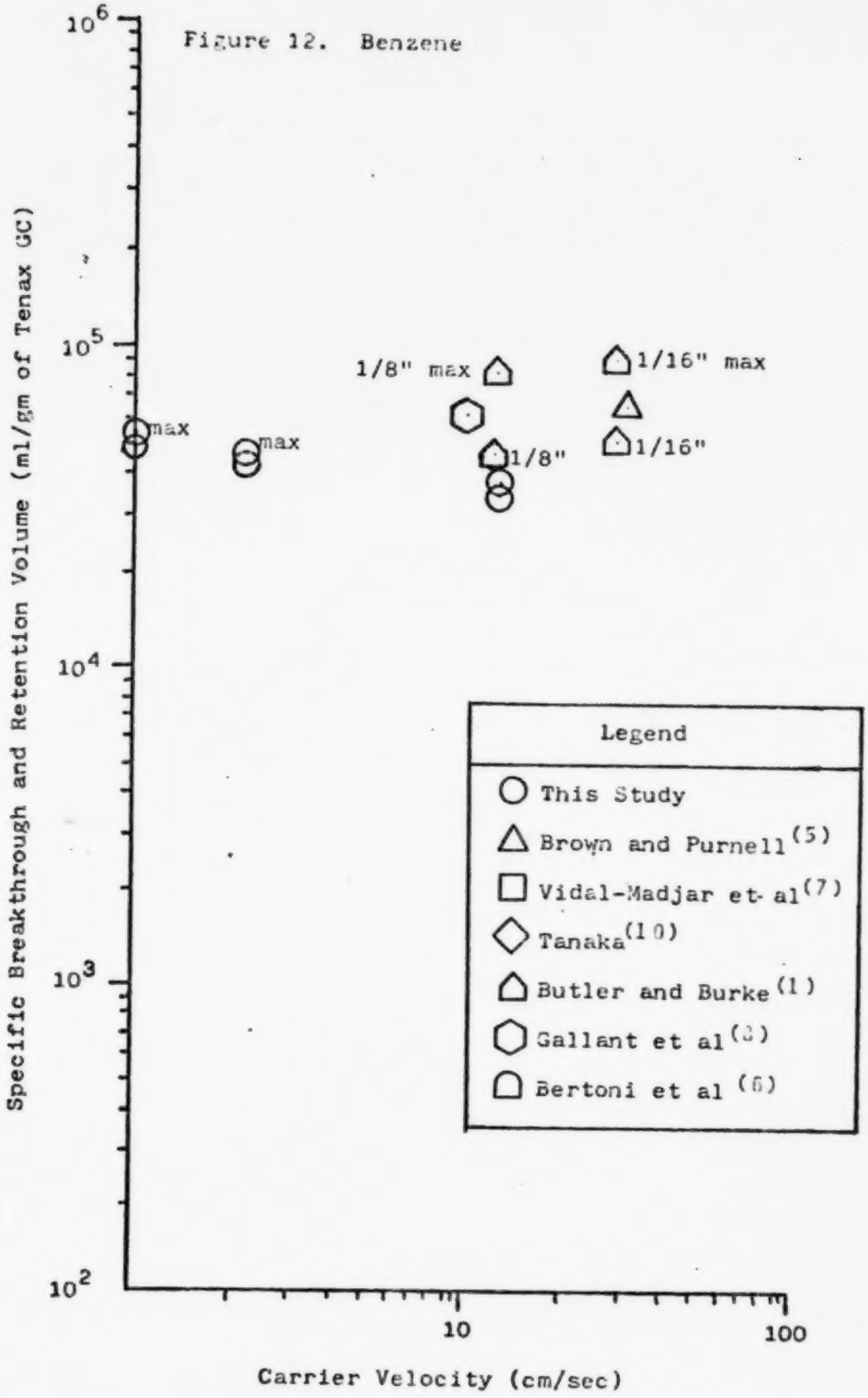


Figure 12. Benzene

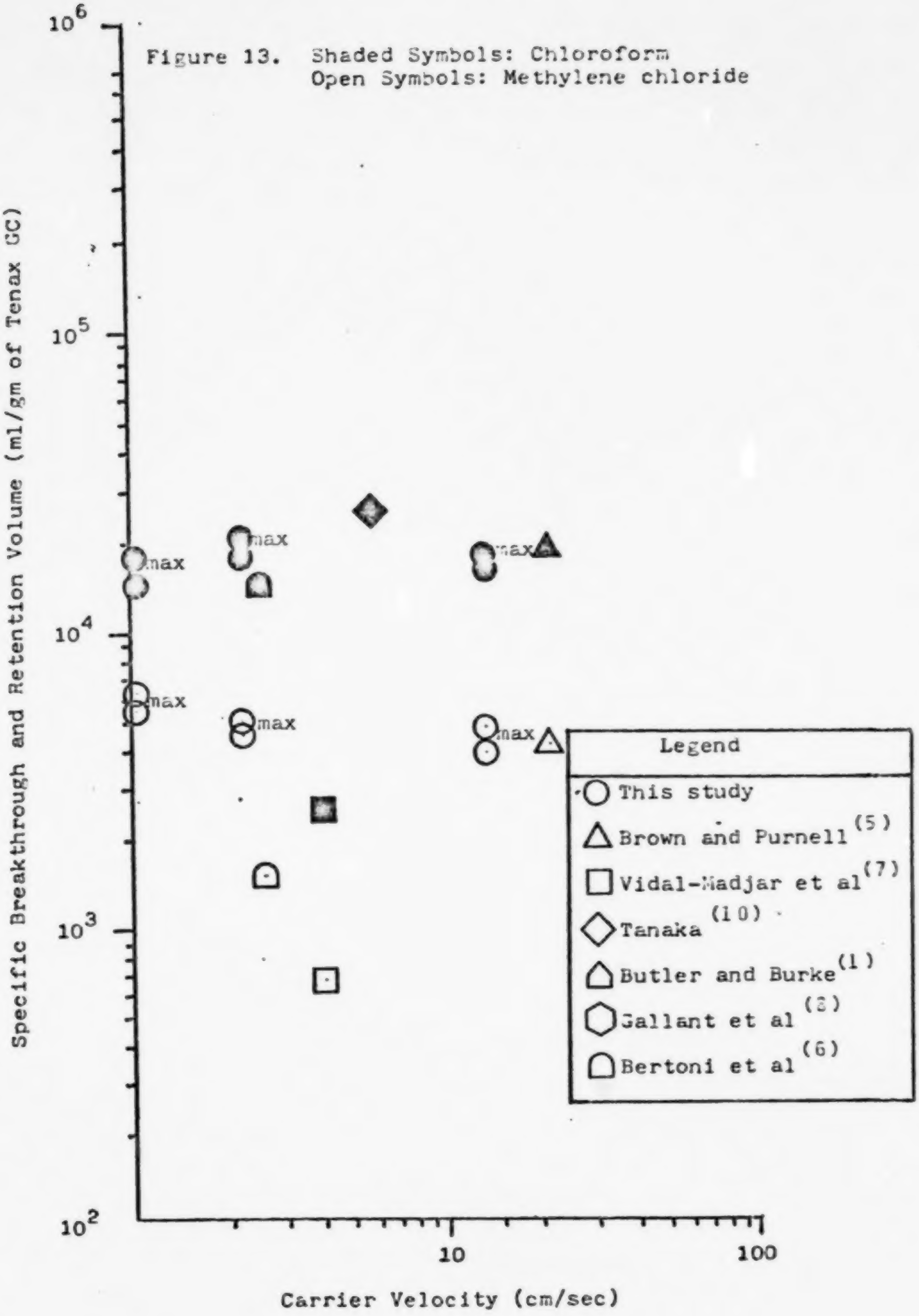


Figure 13. Shaded Symbols: Chloroform
Open Symbols: Methylene chloride

The cryogenic loop experiments were done with a view to confirming the results obtained in the liquid injection experiments conducted previously. Experiments were conducted by sampling different volumes of diluted gas standard ranging from 1,000 ml to 16,000 ml in steps of 1000 ml. The resultant chromatograms were analysed for breakthrough of the four major compounds under consideration. The results of these experiments were compared with those predicted by the liquid injection method for that temperature and were found to match within an error of 5% or better. This is summarized in Table XV.

Additional low temperature retention studies were done on chloroform and carbon tetrachloride at 14°C by the liquid inject method on the 1/4" trap. Both compounds showed initial breakthrough almost instantaneously, 24.6 ml for CCl_4 and 67 ml for $CHCl_3$, long before elution was expected. A small amount of steady bleed of the compound to the detector was observed for long periods of time (hours) until the GC oven temperature was rapidly raised to 80°C when the remaining adsorbent eluted within a few minutes. One possible explanation of this is a slow rate of adsorption and/or diffusion into the pores of the Tenax GC at the lower temperatures. Thus at higher carrier linear velocities (shorter residence times), sufficient amounts of time are not available for complete equilibrium adsorption to be attained. These low temperature results indicate that a small fraction (less than 5%) of the total accumulated chlorocarbon is lost via early breakthrough at low temperatures. The majority of the pollutant is retained by the Tenax GC.

From these experiments it was concluded that a 1/4 inch diameter sample cartridge containing 0.4 grams of Tenax is appropriate for field collection of the pollutants determined in this study, when the total volume of air sampled was approximately 15 liters.

REPRODUCIBILITY OF THE METHOD

In order to test the reproducibility of the entire method, from collection to final analysis, under field conditions, a group of eleven pairs of replicate samples were collected, using separate sampling systems. These were taken as regular samples, with their average, in most cases reported for the values on that day. The study was done over a period of six months, to carry out the trapping under a wide variety of weather conditions. Samples were desorbed under the usual conditions, and no attempt was made to analyze the pairs on the same day. This assured that the day-to-day instrumental variation would be reflected in the results. Sample storage before analysis ranged from 1 to 20 days, and analyses within the same pair were done up to 14 days apart. The standard deviation of the method was calculated as the average of the standard deviations of each pair. Where a substance was not detected in both of the replicates in a pair, it was not included in the calculation, so that the standard deviation would not be appear to be much lower for those compounds detected infrequently. The results, shown in Table XVI, indicate that the relative stand-

TABLE XV

Comparison of Results Obtained From Cryoloop Studies With Specific Breakthrough Volumes (ml/gm of Tenax GC) Predicted by Extrapolation of Liquid Injection Data To Ambient Temperature (21°C)*

Compound	Cryoloop Results (ml/gm)	Predicted Results (ml/gm)	Error %
Methylene chloride	3886	4100	5.2
Chloroform	16840	16447	2.4
Carbon tetrachloride	18135	17821	1.75
Benzene	38860	39056	0.5

---

*Normalized breakthrough volumes are obtained by extrapolating plots of liquid inject data to 21°C i.e. $10^3/294°K$. These values are then divided by the adsorbent bulk density in the 1/4" cartridge (0.144 gm/ml) to give predicted specific breakthrough volumes.

Table XVI

REPRODUCIBILITY OF ANALYSES

Compound	Number of Analyses	Average Conc.	Std. Dev. of method	Relative Std. Dev.
Chloroform	18	0.17 ppb	0.06	37 %
Benzene	22	1.8	0.33	18
Carbon Tetrachloride	18	0.05	0.057	114
Trichloroethylene	10	0.12	0.03	26
Toluene	22	3.5	0.42	12
Tetrachloroethylene	22	0.40	0.12	30
Chlorobenzene	10	0.08	0.01	17
Ethyl benzene	22	1.07	0.24	22
p-Xylene	22	1.25	0.22	18
Styrene	20	0.10	0.02	17
o-Xylene	22	0.35	0.06	18

ard deviation for each of the compounds averages 30%, with carbon tetrachloride showing a high deviation of 114%. If CCl_4 is omitted, the relative deviation is 20%. Carbon tetrachloride appears in most ambient air samples at a level which is just above the detection limit of the system. In this group of samples it averaged 0.05 parts per billion. Since CCl_4 shows a tendency to be lost in the desorption system, the decreased precision for this compound is expected. The concentrations determined in this study can only be regarded as minimum amounts present.

A quality assurance protocol was developed as an important part of the project. This covers each aspect of the analysis, from collection of samples to final data tabulation, and is shown in Appendix II.

SECTION 5

DATA AND RESULTS

The analytical data obtained during the project is reported in Appendix III. In the Appendix III tabulation of the 1979 data, where a compound was detected at too low a level for accurate quantitation it is reported as being present at the detection limit of 0.01 ppb. Where a sample was not taken, or where it was not possible to determine an individual compound because of equipment failure, the missing data is indicated by '*0.00'. A value of 0.00 indicates that the compound was not detected at the sensitivity limits of 0.01 ppb. A summary of the arithmetic averages of concentrations detected for each compound at each site in 1979 is given in Table XVII. Figures 14-19 show these averages in graphical form. Geometric averages were also calculated in order to provide a measure of the typical concentrations of the analytes which is less sensitive to the effect of a few high outlying points. The geometric averages are shown in Table XVIII.

It is apparant from the data that the site in Batsto Village has, as expected, much lower concentrations of the target compounds in the atmosphere. In several mass spectrometric analyses naturally occurring organic vapors-- α-pinene and camphene--have been found, but vapors from both industrial and automotive sources are low in comparison to other sites. Only chlorobenzene seems to be relatively high in comparison to the levels of the other pollutants at the site. A local source of this compound was suspected, but could not be pinpointed.

The averages and data reported for Elizabeth include four samples taken in January at a nearby site in Linden, which was moved because a stack located on the same building appeared to be generating organic vapors. Elizabeth was notable for its average benzene level of 6.2 ppb which was the highest average level found in the project. It is also unusual in that, on average, the benzene level is nearly as high as that of toluene.

Averages of each compound were taken by day of the week at each site. These are shown in Table XIX. Averages for each site for three month periods are shown in Table XX. Trends in this data are not obvious. Elizabeth showed the highest benzene concentration in the January-March and July-September quarters, with these quarters showing levels two times as high as the others. Rutherford showed a peak benzene concentration in January-March but it was not as high as the Elizabeth levels.

For several months the compound N,N-dimethylnitrosamine was included in the group of target compounds. However, it was not detected in any sample either on the GC or GC/MS analyses. Since it proved to be unstable in the cylinder gas standard, its

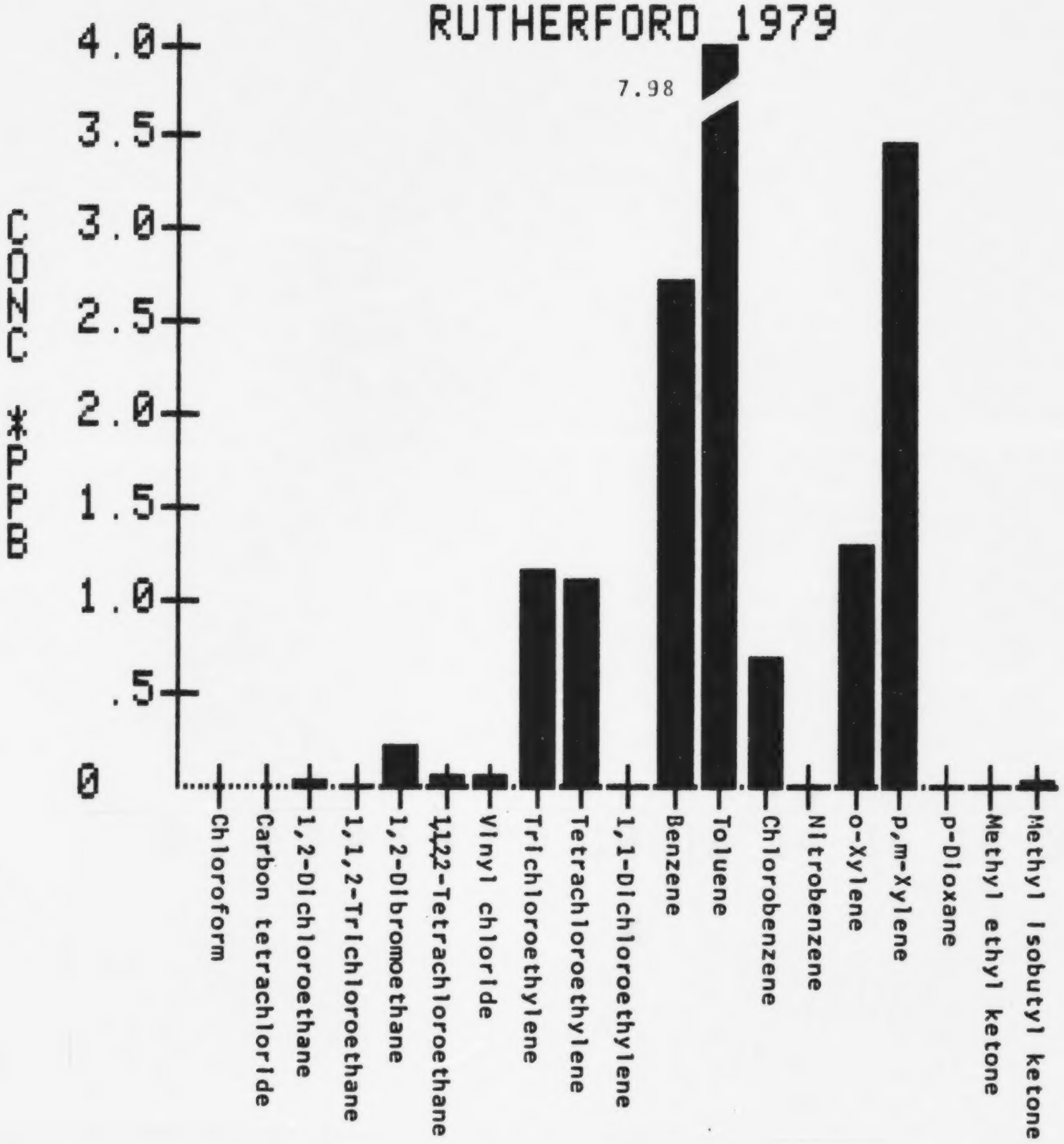

RUTHERFORD 1979
CONC *PPB
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
0
7.98
Chloroform
Carbon tetrachloride
1,2-Dichloroethane
1,1,2-Trichloroethane
1,2-Dibromoethane
1122-Tetrachloroethane
Vinyl chloride
Trichloroethylene
Tetrachloroethylene
1,1-Dichloroethylene
Benzene
Toluene
Chlorobenzene
Nitrobenzene
o-Xylene
p,m-Xylene
p-Dioxane
Methyl ethyl ketone
Methyl isobutyl ketone

Figure 14

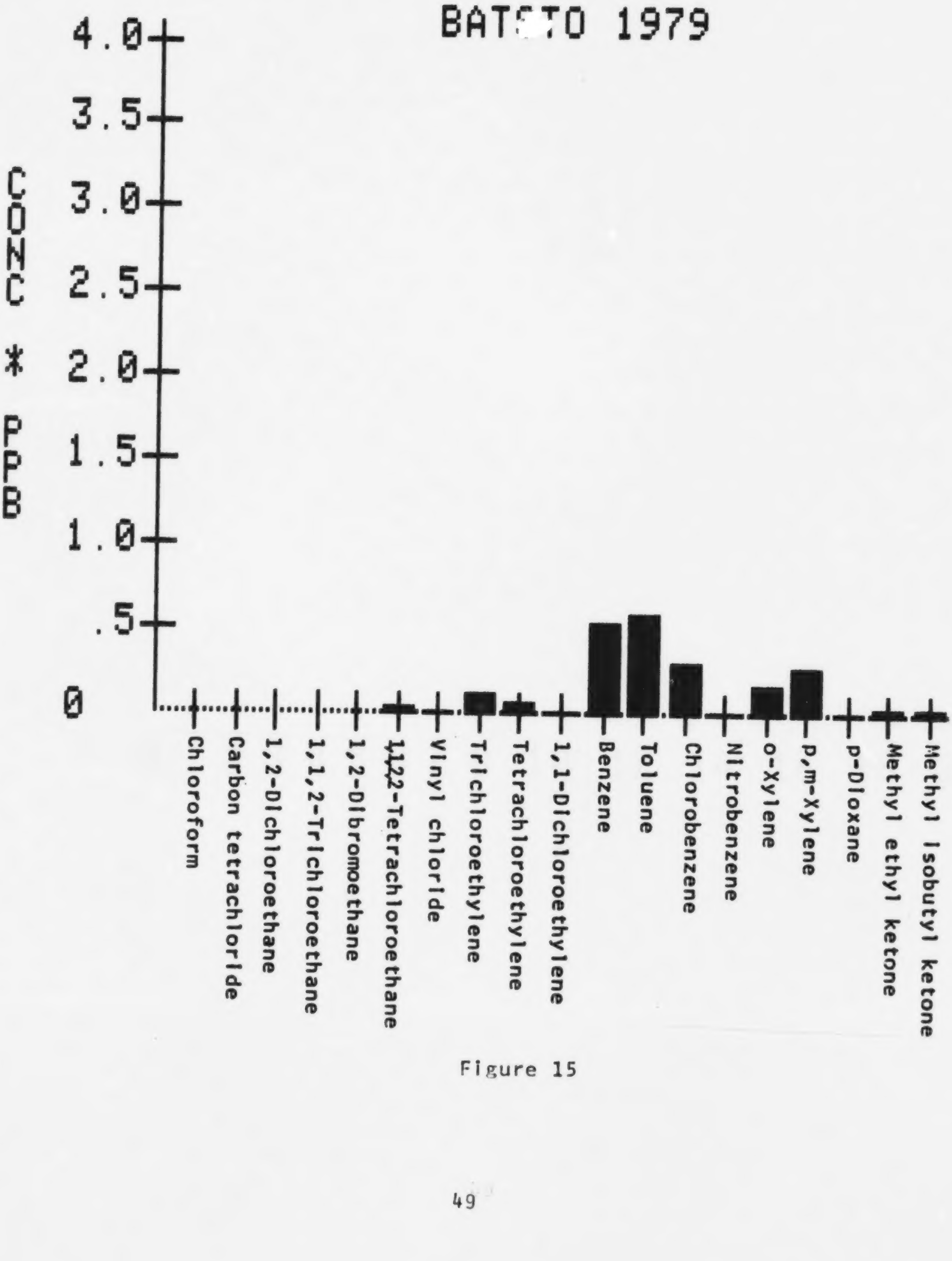

BATSTO 1979
CONC * PPB
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
0
Chloroform
Carbon tetrachloride
1,2-Dichloroethane
1,1,2-Trichloroethane
1,2-Dibromoethane
1,1,2,2-Tetrachloroethane
Vinyl chloride
Trichloroethylene
Tetrachloroethylene
1,1-Dichloroethylene
Benzene
Toluene
Chlorobenzene
Nitrobenzene
o-Xylene
p,m-Xylene
p-Dioxane
Methyl ethyl ketone
Methyl isobutyl ketone

Figure 15

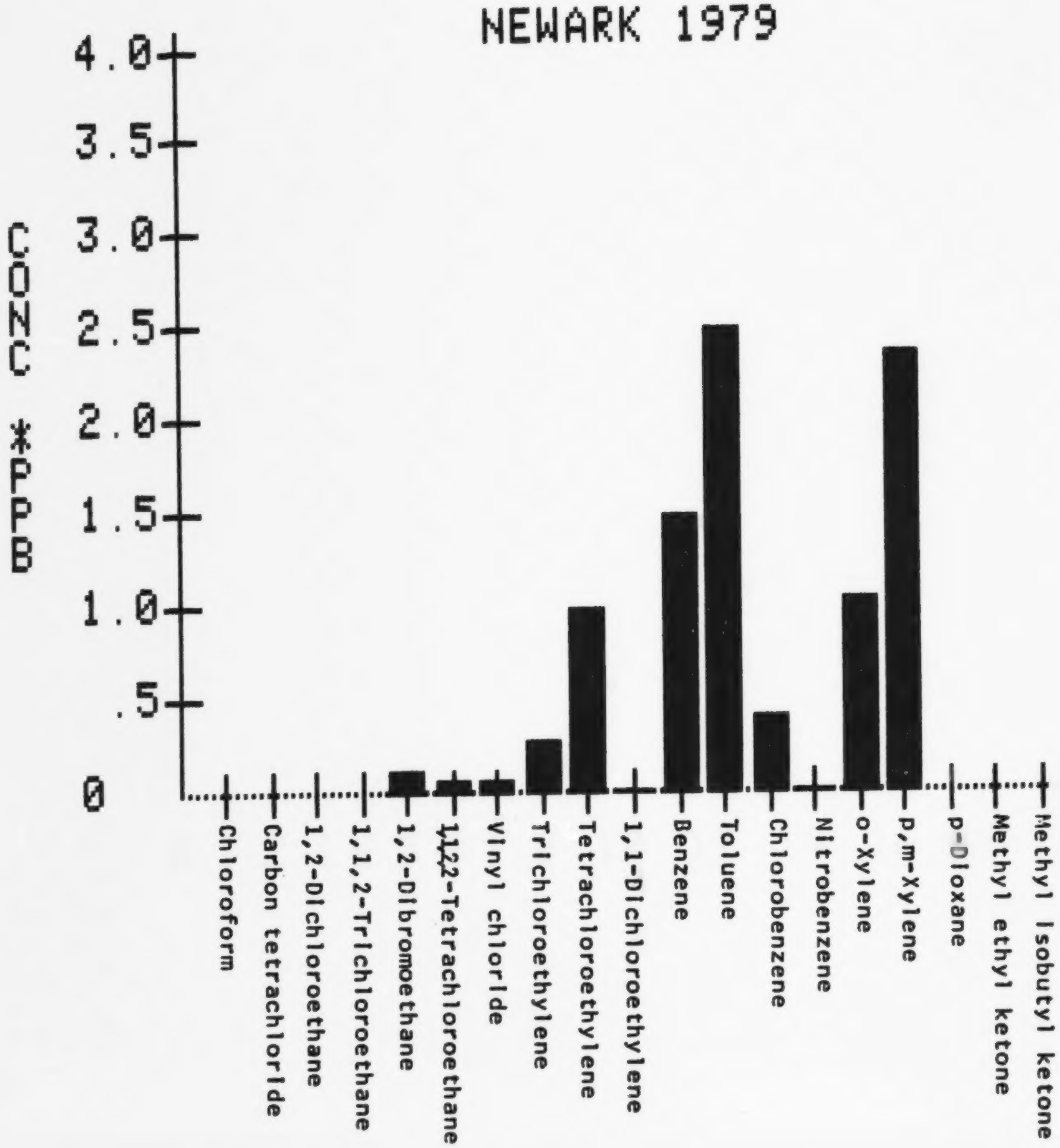

NEWARK 1979
CONC *PPB
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
0
Chloroform
Carbon tetrachloride
1,2-Dichloroethane
1,1,2-Trichloroethane
1,2-Dibromoethane
1122-Tetrachloroethane
Vinyl chloride
Trichloroethylene
Tetrachloroethylene
1,1-Dichloroethylene
Benzene
Toluene
Chlorobenzene
Nitrobenzene
o-Xylene
p,m-Xylene
p-Dioxane
Methyl ethyl ketone
Methyl isobutyl ketone

Figure 16

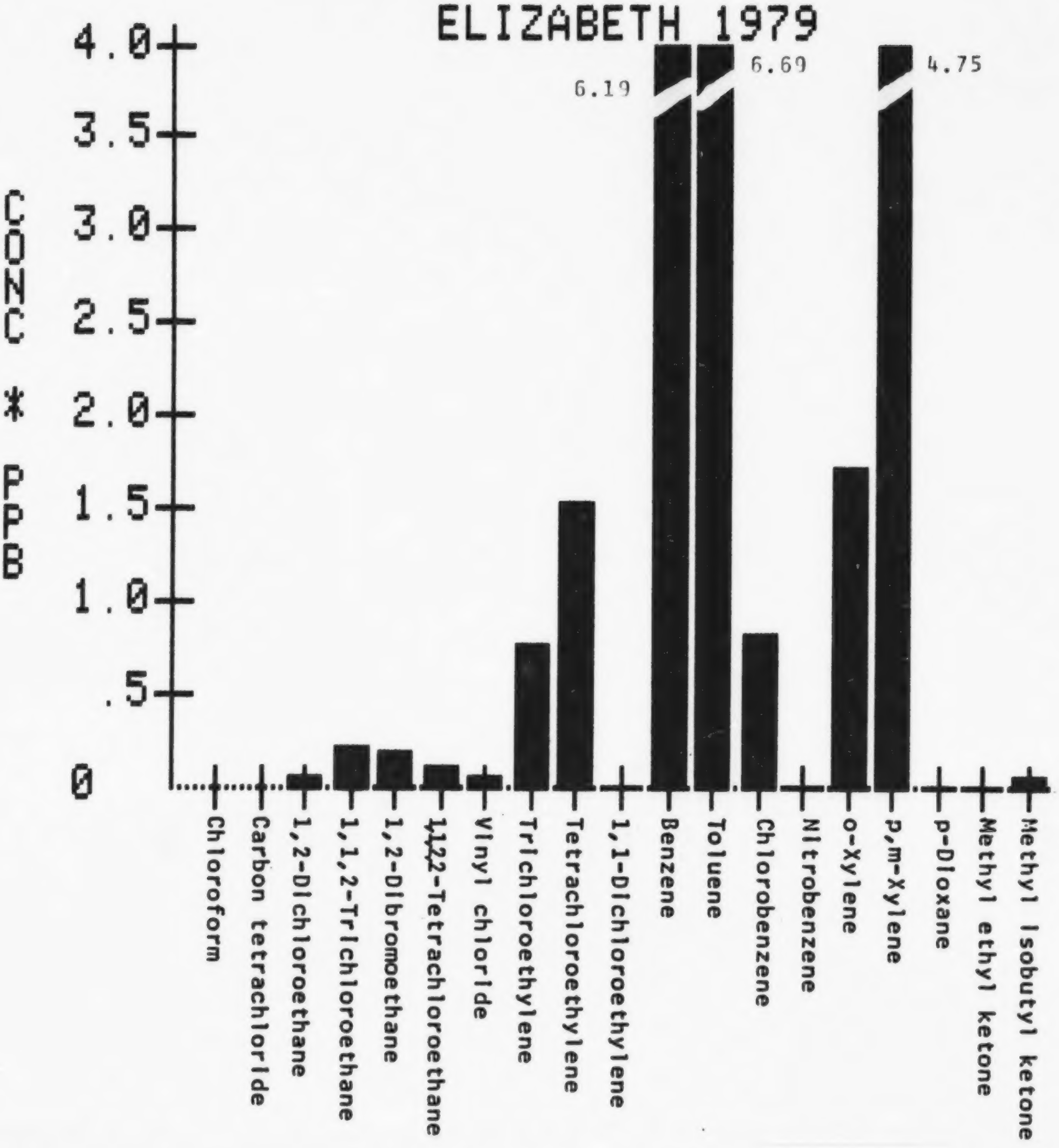
ELIZABETH 1979
CONC * PPB
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
0
6.19
6.69
4.75
Chloroform
Carbon tetrachloride
1,2-Dichloroethane
1,1,2-Trichloroethane
1,2-Dibromoethane
1,1,2,2-Tetrachloroethane
Vinyl chloride
Trichloroethylene
Tetrachloroethylene
1,1-Dichloroethylene
Benzene
Toluene
Chlorobenzene
Nitrobenzene
o-Xylene
p,m-Xylene
p-Dioxane
Methyl ethyl ketone
Methyl isobutyl ketone

Figure 17

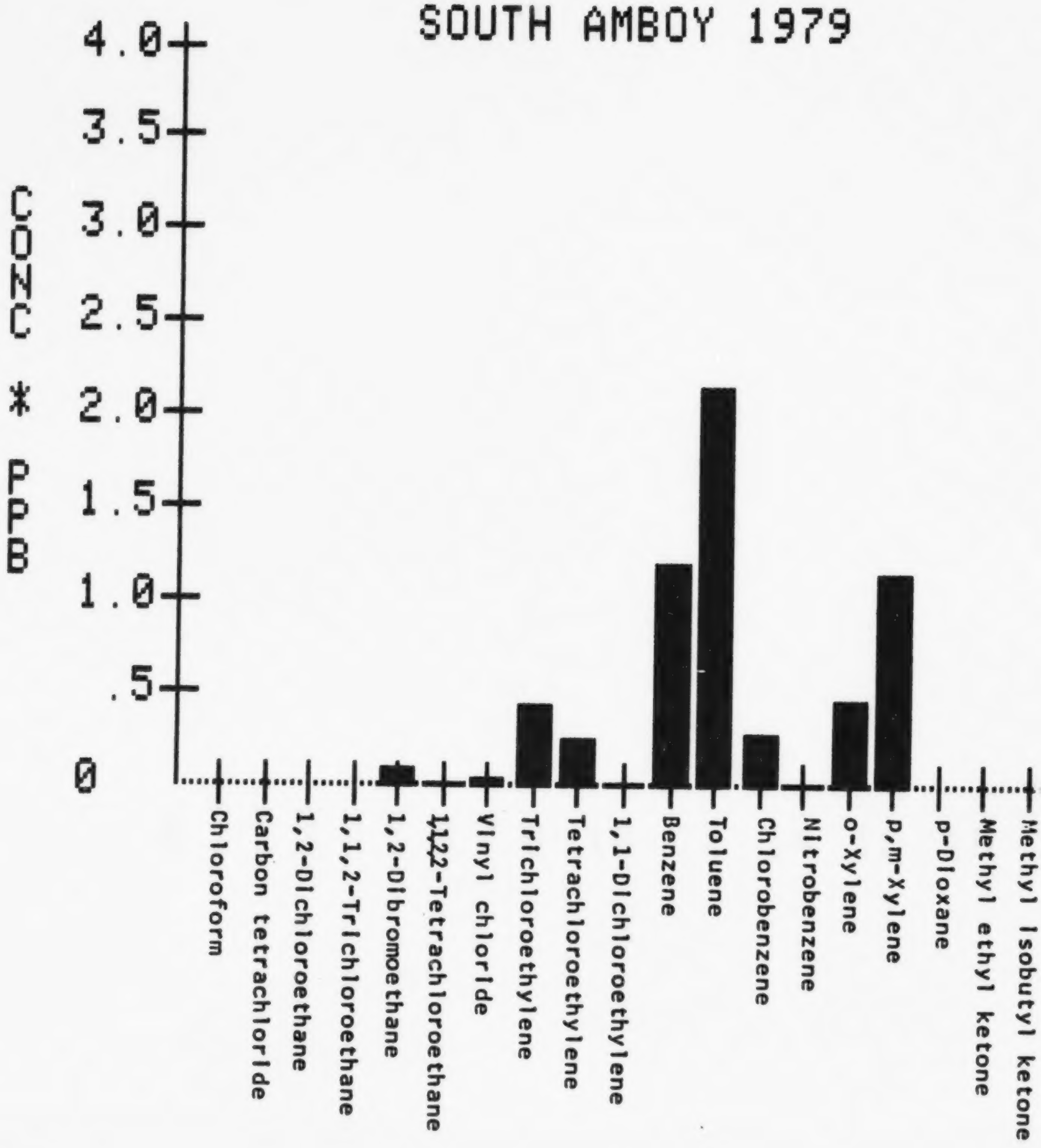

SOUTH AMBOY 1979
CONC * PPB
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
0
Chloroform
Carbon tetrachloride
1,2-Dichloroethane
1,1,2-Trichloroethane
1,2-Dibromoethane
1122-Tetrachloroethane
Vinyl chloride
Trichloroethylene
Tetrachloroethylene
1,1-Dichloroethylene
Benzene
Toluene
Chlorobenzene
Nitrobenzene
o-Xylene
p,m-Xylene
p-Dioxane
Methyl ethyl ketone
Methyl isobutyl ketone

Figure 18

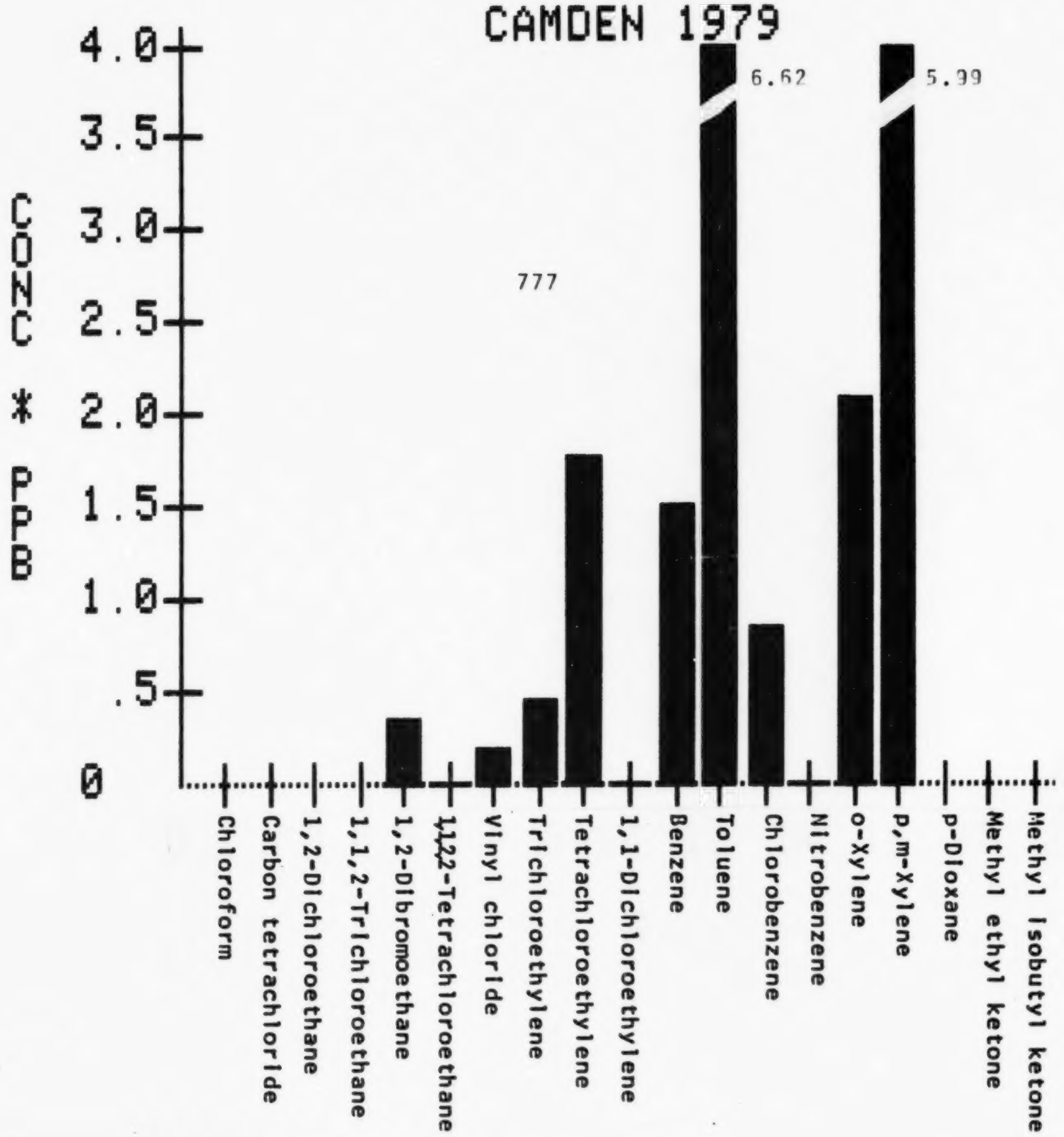

CAMDEN 1979
CONC * PPB
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
0
6.62
5.99
777
Chloroform
Carbon tetrachloride
1,2-Dichloroethane
1,1,2-Trichloroethane
1,2-Dibromoethane
1,1,2,2-Tetrachloroethane
Vinyl chloride
Trichloroethylene
Tetrachloroethylene
1,1-Dichloroethylene
Benzene
Toluene
Chlorobenzene
Nitrobenzene
o-Xylene
p,m-Xylene
p-Dioxane
Methyl ethyl ketone
Methyl isobutyl ketone

Figure 19

TABLE XVII

SUMMARY OF SELECTED VOLATILE ORGANIC SUBSTANCE CONCENTRATIONS IN NEW JERSEY, 1979

	RUTHERFORD					NEWARK				
	All Samples			Quantifiable Samples		All Samples			Quantifiable Samples	
	# of Samples	Avg Conc	Range	# of Samples	Avg Conc	# of Samples	Avg Conc	Range	# of Samples	Avg Conc
Chloroform	46	0.00	0-0.01	0	-	50	0.00	0-0.01	0	-
Carbon tetrachloride	46	0.00	0-0.1	0	-	50	0.00	0-0.1	0	-
1,2-Dichloroethane	46	0.01	0-0.46	1	0.46	50	0.00	0-0.01	0	-
1,1,2-Trichloroethane	46	0.00	0-0.01	0	-	50	0.00	0-0.01	0	-
1,2-Dibromoethane	37	0.20	0-2.9	8	0.90	43	0.09	0-1.0	8	0.46
1,1,2,2-Tetrachloroethane	46	0.03	0-1.1	2	0.65	50	0.03	0-0.96	2	0.68
Vinyl chloride	13	0.03	0-0.32	2	0.19	15	0.04	0-0.57	1	0.57
Trichloroethylene	46	1.15	0-8.6	28	1.89	50	0.25	0-1.9	14	0.86
Tetrachloroethylene	46	1.10	0-9.2	36	1.40	50	0.98	0-32	23	2.12
1,1-Dichloroethylene	46	0.00	-	0	-	51	0.00	-	0	-
Benzene	46	2.72	0.01-16	44	2.80	50	1.46	0.01-9.1	49	1.49
Toluene	46	7.98	0.01-31	45	8.16	50	2.49	0.01-12	48	2.59
Chlorobenzene	46	0.67	0-12	38	0.81	50	0.39	0-5.7	35	0.55
Nitrobenzene	46	0.00	0-0.01	0	-	50	0.00	-	0	-
Ortho xylene	37	1.28	0-4.4	34	1.40	43	1.03	0.01-9.80	39	1.13
Para/meta xylenes	37	3.46	0.09-12	36	3.55	43	2.35	0.01-31	41	2.46
1,4-Dioxane	27	0.00	-	0	-	31	0.00	-	0	-
Methyl ethyl ketone	29	0.00	-	0	-	31	0.00	-	0	-
Methyl isobutyl ketone	27	0.01	0-0.25	1	0.25	31	0.00	0-0.01	0	-

Concentrations reported in parts per billion by volume

Zero quantities and quantities estimated as traces are not included in the quantifiable sample averages but are included in the all-sample averages.

TABLE XVII (CONTINUED)

SUMMARY OF SELECTED VOLATILE ORGANIC SUBSTANCE CONCENTRATIONS IN NEW JERSEY, 1979

	ELIZABETH					SOUTH AMBOY				
	All Samples			Quantifiable Samples		All Samples			Quantifiable Samples	
	# of Samples	Avg Conc	Range	# of Samples	Avg Conc	# of Samples	Avg Conc	Range	# of Samples	Avg Conc
Chloroform	54	0.00	0-0.01	0	-	48	0.00	-	0	-
Carbon Tetrachloride	54	0.00	0-0.1	0	-	48	0.00	0-0.1	0	-
1,2-Dichloroethane	54	0.03	0-1.7	1	1.7	48	0.00	0-0.01	0	-
1,1,2-Trichloroethane	54	0.20	0-9.7	2	5.30	48	0.00	-	0	-
1,2-Dibromoethane	42	0.18	0-2.3	9	0.81	39	0.07	0-1.3	4	0.66
1,1,2,2-Tetrachloroethane	54	0.08	0-2.0	2	1.9	48	0.00	0-0.01	0	-
Vinyl Chloride	13	0.05	0-0.61	1	0.61	13	0.02	0-0.17	1	0.17
Trichloroethylene	54	0.76	0-6.4	26	1.57	48	0.40	0-8.5	10	1.91
Tetrachloroethylene	54	1.54	0-14	39	2.11	48	0.22	0-2.2	11	0.93
1,1-Dichloroethylene	54	0.00	0-0.01	0	-	48	0.00	0-0.01	0	-
Benzene	54	6.19	0-62	51	6.55	48	1.19	0-7.6	41	1.39
Toluene	54	6.69	0-80.7	51	7.09	48	2.13	0-9.2	42	2.43
Chlorobenzene	54	0.82	0-9.1	45	0.98	48	0.26	0-3.9	24	0.51
Nitrobenzene	54	0.00	-	0	-	48	0.00	-	0	-
Ortho xylene	42	1.72	0.01-17.5	39	1.85	39	0.44	0-4.3	31	0.54
Para/meta xylenes	42	4.75	0.10-47	39	5.11	39	1.12	0-10	33	1.32
1,4-Dioxane	36	0.00	-	0	-	32	0.00	0-0.01	0	-
Methyl ethyl ketone	36	0.00	-	0	-	32	0.00	-	0	-
Methyl isobutyl ketone	36	0.03	0-1.0	2	0.56	32	0.00	0-0.01	0	-

Concentrations reported in parts per billion by volume

Zero quantities and quantities estimated as traces are not included in the quantifiable sample averages but are included in the all-sample averages.

TABLE XVII (CONTINUED)

SUMMARY OF SELECTED VOLATILE ORGANIC SUBSTANCE CONCENTRATIONS IN NEW JERSEY, 1979

	PINE BARRENS (BATSTO)					CAMDEN				
	All Samples			Quantifiable Samples		All Samples			Quantifiable Samples	
	# of Samples	Avg Conc	Range	# of Samples	Avg Conc	# of Samples	Avg Conc	Range	# of Samples	Avg Conc
Chloroform	42	0.00	0-0.01	0	-	23	0.00	0-0.01	0	-
Carbon Tetrachloride	42	0.00	0-0.1	0	-	23	0.01	0-0.1	0	-
1,2-Dichloroethane	42	0.00	0-0.01	0	-	23	0.00	0-0.01	0	-
1,1,2-Trichloroethane	42	0.00	0-0.01	0	-	23	0.00	-	0	-
1,2-Dibromoethane	38	0.00	0-0.01	0	-	23	0.34	0-4.6	6	1.30
1,1,2,2-Tetrachloroethane	42	0.02	0-0.77	1	0.77	23	0.00	0-0.01	0	-
Vinyl chloride	15	0.00	0-0.01	0	-	4	0.16	0-0.64	1	0.64
Trichloroethylene	42	0.08	0-1.3	4	0.79	23	0.43	0-3.5	10	0.97
Tetrachloroethylene	42	0.04	0-0.53	5	0.29	23	1.76	0-30	10	4.04
1,1-Dichloroethylene	42	0.00	-	0	-	23	0.00	-	0	-
Benzene	42	0.52	0-2.5	34	0.64	23	1.50	0.16-7.0	23	1.5
Toluene	42	0.56	0-3.3	32	0.74	23	6.62	0.22-36	23	6.6
Chlorobenzene	42	0.28	0-2.8	14	0.82	23	0.83	0.01-2.9	22	0.86
Nitrobenzene	42	0.00	-	0	-	23	0.00	-	0	-
Ortho xylene	38	0.14	0-1.2	20	0.26	23	2.08	0.05-14.5	23	2.1
Para/meta xylenes	38	0.25	0-1.2	23	0.41	23	5.99	0.15-35	23	6.0
1,4-Dioxane	26	0.00	-	0	-	16	0.00	-	0	-
Methyl ethyl ketone	26	0.00	-	0	-	16	0.00	-	0	-
Methyl isobutyl ketone	26	0.00	0-0.11	1	0.11	16	0.00	0-0.01	0	-

Concentrations reported in parts per billion by volume

Zero quantities and quantities estimated as traces are not included in the quantifiable sample averages but are included in the all-sample averages.

GEOMETRIC AVERAGES OF SELECTED VOLATILE ORGANIC SUBSTANCE CONCENTRATIONS IN NEW JERSEY, 1979

	Rutherford	Newark	Elizabeth	South Amboy	Batsto	Camden
VINYL CHLORIDE	0.01	0.01	0.01	0.01	0.00	0.02
1,1-DICHLOROETHYLENE	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE	1.48	0.84	2.32	0.42	0.23	1.06
CARBON TETRACHLORIDE	0.00	0.00	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE	0.14	0.02	0.07	0.02	0.01	0.05
1,4-DIOXANE	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE	0.00	0.00	0.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE	4.00	1.16	2.35	0.76	0.17	4.06
1,2-DIBROMOETHANE	0.01	0.01	0.01	0.01	0.00	0.02
TETRACHLOROETHYLENE	0.27	0.04	0.22	0.02	0.01	0.05
CHLOROBENZENE	0.17	0.08	0.24	0.04	0.03	0.54
PARA/META XYLENES	1.94	0.77	1.70	0.35	0.07	3.40
ORTHO XYLENE	0.61	0.32	0.73	0.14	0.04	1.12
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE	0.00	0.00	0.00	0.00	0.00	0.00

Concentrations in parts per billion
0.00 indicates that the geometric mean was below 0.005 ppb.
Daily concentrations reported as "not detected" are averaged here as 0.0025 ppb
Daily concentrations reported as "trace" are averaged as 0.01 ppb

Table XVIII

Arithmetic Average of Concentration by Day of Week (ppb)

1979

AT:RUTHERFORD

COMPOUND NAME	SUN.	MON.	TUES.	WED.	THUR.	FRI.	SAT.
VINYL CHLORIDE	0.01	0.01	0.01	0.01	0.01	0.32	0.03
1,1-DICHLOROETHYLENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE	0.06	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE	2.76	5.02	2.39	1.95	2.12	3.11	1.15
CARBON TETRACHLORIDE	0.01	0.00	0.01	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE	1.16	2.13	1.81	0.22	0.94	1.19	0.18
1,4-DIOXANE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE	0.00	0.00	0.01	0.00	0.00	0.00	0.08
1,1,2-TRICHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE	5.36	12.74	11.56	6.18	8.42	8.38	2.59
1,2-DIBROMOETHANE	0.03	0.06	0.38	0.24	0.08	0.73	0.04
TETRACHLOROETHYLENE	0.62	2.09	1.85	0.47	1.06	0.75	0.47
CHLOROBENZENE	0.39	0.52	0.53	0.13	0.32	2.84	0.42
PARA/META XYLENES	2.50	3.39	5.23	3.05	4.30	4.50	1.59
ORTHO XYLENE	0.82	1.37	2.38	1.04	1.69	1.08	0.49
1,1,2,2TETRACHLOROETHANE	0.14	0.00	0.00	0.00	0.04	0.00	0.00
NITROBENZENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----NO CONCENTRATION OF THE COMPOUND WERE FOUND DURING THE CAMPAIGN

N.J.I.T. AIR POLLUTION RESEARCH LAB

Table XIX

Arithmetic Average of Concentration by Day of Week (ppb)

1979

AT:NEWARK

COMPOUND NAME	SUN.	MON.	TUES.	WED.	THUR.	FRI.	SAT.
VINYL CHLORIDE..........	0.00	0.01	0.01	0.01	0.29	0.01	0.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE.................	1.45	1.94	1.41	1.19	1.98	0.77	1.18
CARBON TETRACHLORIDE....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE.......	0.01	0.53	0.16	0.31	0.30	0.01	0.29
1,4-DIOXANE.............	0.00	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE..	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE.................	2.11	3.08	3.72	1.37	3.41	1.54	1.75
1,2-DIBROMOETHANE.......	0.16	0.01	0.09	0.20	0.08	0.12	0.00
TETRACHLOROETHYLENE.....	0.02	1.03	0.25	5.47	0.33	0.21	0.28
CHLOROBENZENE...........	0.21	0.16	1.11	0.95	0.19	0.20	0.09
PARA/META XYLENES.......	1.04	1.83	3.93	5.98	1.32	1.28	1.15
ORTHO XYLENE............	0.37	0.48	1.60	2.00	0.71	0.44	1.51
1,1,2,2TETRACHLOROETHANE	0.14	0.00	0.00	0.00	0.00	0.08	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----NO CONCENTRATION OF THE COMPOUND WERE FOUND DURING THE CAMPAIGN

N.J.I.T. AIR POLLUTION RESEARCH LAB

Table XIX (cont)

Arithmetic Average of Concentration by Day of Week (ppb)

1979

AT:ELIZABETH

COMPOUND NAME	SUN.	MON.	TUES.	WED.	THUR.	FRI.	SAT.
VINYL CHLORIDE...........	0.01	0.00	0.31	0.01	0.01	0.01	0.01
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM...............	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.22	0.00	0.00	0.00
BENZENE..................	4.76	2.51	8.96	3.78	5.69	13.59	5.31
CARBON TETRACHLORIDE....	0.00	0.00	0.00	0.01	0.00	0.00	0.01
TRICHLOROETHYLENE.......	0.31	1.16	0.99	0.37	0.74	0.79	0.98
1,4-DIOXANE..............	0.00	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE..	0.00	0.00	0.20	0.00	0.00	0.00	0.03
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.11	1.21	0.00	0.00
TOLUENE..................	3.70	5.01	8.25	12.14	4.92	9.45	3.91
1,2-DIBROMOETHANE.......	0.50	0.03	0.00	0.39	0.17	0.01	0.08
TETRACHLOROETHYLENE.....	0.54	2.20	3.11	0.69	1.75	1.15	1.42
CHLOROBENZENE...........	0.41	1.27	1.20	0.38	0.38	0.55	1.56
PARA/META XYLENES.......	2.69	2.65	7.52	2.64	2.71	14.41	2.55
ORTHO XYLENE............	1.02	1.15	2.55	1.24	0.85	4.80	1.03
1,1,2,2TETRACHLOROETHANE	0.24	0.00	0.00	0.25	0.00	0.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS

0.00-----NO CONCENTRATION OF THE COMPOUND WERE FOUND DURING THE CAMPAIGN

N.J.I.T. AIR POLLUTION RESEARCH LAB

Table XIX (cont)

Arithmetic Average of Concentration by Day of Week (ppb)

1979

AT:SOUTH AMBOY

COMPOUND NAME	SUN.	MON.	TUES.	WED.	THUR.	FRI.	SAT.
VINYL CHLORIDE..........	0.06	0.00	0.00	0.01	0.00	0.00	0.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE.................	1.21	2.29	1.02	0.80	1.13	0.73	1.19
CARBON TETRACHLORIDE....	0.01	0.00	0.00	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE.......	0.01	1.22	0.08	1.14	0.10	0.01	0.05
1,4-DIOXANE.............	0.00	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE..	0.01	0.01	0.00	0.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE.................	2.96	3.90	2.10	1.79	2.00	1.16	1.35
1,2-DIBROMOETHANE.......	0.02	0.37	0.01	0.00	0.08	0.00	0.00
TETRACHLOROETHYLENE.....	0.01	0.57	0.02	0.32	0.06	0.22	0.22
CHLOROBENZENE...........	0.36	0.95	0.05	0.10	0.21	0.10	0.08
PARA/META XYLENES.......	2.58	1.63	0.72	0.50	1.20	0.89	0.59
ORTHO XYLENE............	1.13	0.61	0.22	0.25	0.39	0.34	0.21
1,1,2,2TETRACHLOROETHANE	0.01	0.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----NO CONCENTRATION OF THE COMPOUND WERE FOUND DURING THE CAMPAIGN

N.J.I.T. AIR POLLUTION RESEARCH LAB

Table XIX (cont)

Arithmetic Average of Concentration by Day of Week (ppb)

1979

AT:BATSTO

COMPOUND NAME	SUN.	MON.	TUES.	WED.	THUR.	FRI.	SAT.
VINYL CHLORIDE..........	0.01	0.00	0.00	0.01	0.01	0.00	0.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE.................	0.43	0.72	0.77	0.30	0.43	0.37	0.51
CARBON TETRACHLORIDE....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE.......	0.01	0.19	0.18	0.12	0.00	0.00	0.00
1,4-DIOXANE.............	0.00	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE..	0.00	0.00	0.00	0.02	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE.................	0.99	0.30	0.98	0.28	0.35	0.64	0.42
1,2-DIBROMOETHANE.......	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TETRACHLOROETHYLENE.....	0.05	0.01	0.03	0.07	0.00	0.14	0.00
CHLOROBENZENE...........	0.64	0.11	0.62	0.07	0.01	0.33	0.17
PARA/META XYLENES.......	0.34	0.20	0.30	0.13	0.27	0.37	0.20
ORTHO XYLENE............	0.29	0.08	0.23	0.06	0.06	0.17	0.07
1,1,2,2TETRACHLOROETHANE	0.13	0.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----NO CONCENTRATION OF THE COMPOUND WERE FOUND DURING THE CAMPAIGN

N.J.I.T. AIR POLLUTION RESEARCH LAB

Table XIX (cont)

Arithmetic Average of Concentration by Day of Week (ppb)

1979

AT:CAMDEN

COMPOUND NAME	SUN.	MON.	TUES.	WED.	THUR.	FRI.	SAT.
VINYL CHLORIDE	0.01	0.01	*0.00	0.00	0.64	*0.00	*0.00
1,1-DICHLOROETHYLENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE	1.01	0.98	2.23	1.17	1.84	1.60	1.40
CARBON TETRACHLORIDE	0.00	0.00	0.00	0.00	0.00	0.01	0.00
TRICHLOROETHYLENE	1.22	0.17	0.33	0.28	0.66	0.01	0.01
1,4-DIOXANE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE	3.56	5.80	4.68	5.75	16.57	2.90	1.40
1,2-DIBROMOETHANE	0.14	0.06	0.15	1.15	0.47	0.00	0.01
TETRACHLOROETHYLENE	1.37	0.69	0.32	0.45	7.55	0.01	0.01
CHLOROBENZENE	0.75	0.96	1.19	0.56	1.02	0.01	0.32
PARA/META XYLENES	4.43	5.22	3.31	5.35	15.40	2.20	0.91
ORTHO XYLENE	1.33	1.62	1.76	1.41	5.34	0.53	0.51
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----NO CONCENTRATION OF THE COMPOUND WERE FOUND DURING THE CAMPAIGN

N.J.I.T. AIR POLLUTION RESEARCH LAB

Table XIX (cont)

Arithmetic Average of Concentration by Day of Week (ppb)

1980

AT:RUTHERFORD

COMPOUND NAME	SUN.	MON.	TUES.	WED.	THUR.	FRI.	SAT.
VINYL CHLORIDE..........	0.00	3.99	0.00	0.00	0.01	0.00	0.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM..............	0.36	1.07	0.28	0.37	0.26	0.29	0.16
BENZENE.................	2.21	3.93	1.79	2.97	2.65	3.64	2.10
CARBON TETRACHLORIDE....	0.05	0.20	0.08	0.04	0.08	0.05	0.01
TRICHLOROETHYLENE.......	0.64	1.25	0.29	0.65	0.39	1.08	0.83
1,1,2-TRICHLOROETHANE...	0.00	0.10	0.09	0.00	0.19	0.13	0.00
TOLUENE.................	6.88	30.10	6.12	5.80	7.28	6.13	4.94
1,2-DIBROMOETHANE.......	0.03	0.18	0.05	0.24	0.05	0.40	0.02
TETRACHLOROETHYLENE.....	2.33	2.03	0.72	1.17	1.05	1.17	1.36
CHLOROBENZENE...........	0.29	0.90	0.22	0.25	0.15	0.42	0.26
ETHYL BENZENE...........	0.71	1.25	1.50	0.82	0.67	0.82	0.61
PARA/META XYLENES	1.94	3.99	3.98	2.19	1.98	2.55	1.60
ORTHO XYLENE	0.75	2.50	0.80	0.57	0.62	0.71	0.54
1,1,2,2TETRACHLOROETHANE	0.23	0.02	0.03	0.00	0.03	0.00	0.09
NITROBENZENE............	0.90	0.15	0.24	0.02	0.01	0.02	0.06
STYRENE.................	0.16	0.65	0.11	0.25	0.28	0.28	0.52
O-CHLOROTOLUENE.........	0.05	0.21	0.09	0.33	0.01	0.06	0.11
P-CHLOROTOLUENE.........	0.09	0.20	0.15	0.17	0.13	0.10	0.10
P-DICHLOROBENZENE.......	0.02	0.02	0.02	0.04	0.04	0.02	0.08
O-DICHLOROBENZENE.......	0.02	0.05	0.01	0.06	0.01	0.01	0.04

*0.00-----NO ANALYSIS
0.00-----NO CONCENTRATION OF THE COMPOUND WERE FOUND DURING THE CAMPAIGN

N.J.I.T. AIR POLLUTION RESEARCH LAB

Table XIX (cont)

Arithmetic Average of Concentration by Day of Week (ppb)

1980

AT:BATSTO

COMPOUND NAME	SUN.	MON.	TUES.	WED.	THUR.	FRI.	SAT.
VINYL CHLORIDE	14.00	14.00	0.00	0.00	0.00	0.00	9.33
1,1-DICHLOROETHYLENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM	0.41	0.25	0.08	0.20	0.15	0.33	0.32
BENZENE	1.20	0.77	1.42	1.31	1.46	0.96	1.22
CARBON TETRACHLORIDE	0.02	0.03	0.03	0.08	0.01	0.06	0.05
TRICHLOROETHYLENE	0.07	0.04	0.03	0.08	0.18	0.45	0.19
1,1,2-TRICHLOROETHANE	0.20	0.01	0.09	0.12	0.02	0.12	0.09
TOLUENE	1.63	2.44	1.51	2.99	1.56	1.67	2.35
1,2-DIBROMOETHANE	0.05	0.01	0.01	0.12	0.02	0.10	0.04
TETRACHLOROETHYLENE	0.17	0.14	0.39	0.33	0.67	0.39	0.39
CHLOROBENZENE	0.11	0.08	0.12	0.20	0.14	0.24	0.18
ETHYL BENZENE	0.17	0.28	0.22	0.28	0.28	0.28	0.17
PARA/META XYLENES	0.61	1.38	0.60	0.67	0.47	0.53	0.40
ORTHO XYLENE	0.23	0.99	0.11	0.27	0.15	0.28	0.62
1,1,2,2TETRACHLOROETHANE	0.09	0.00	0.01	0.43	0.06	0.00	0.02
NITROBENZENE	0.12	0.13	0.00	0.00	0.00	0.06	0.00
STYRENE	0.22	0.18	0.02	1.23	0.21	0.09	0.20
O-CHLOROTOLUENE	0.07	0.37	0.10	0.05	0.06	0.03	0.17
P-CHLOROTOLUENE	0.13	0.80	0.01	0.02	0.00	0.01	0.11
P-DICHLOROBENZENE	0.40	0.10	0.00	0.00	0.00	0.66	0.02
O-DICHLOROBENZENE	0.13	0.12	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS

0.00-----NO CONCENTRATION OF THE COMPOUND WERE FOUND DURING THE CAMPAIGN

N.J.I.T. AIR POLLUTION RESEARCH LAB

Table XIX (cont)

Arithmetic Average of Concentration by Quarters (ppb)

1979

COMPOUND NAME	AT RUTHERFORD JAN-MARCH MEAN	APRIL-JUNE MEAN	JULY-SEPT MEAN	OCT-DEC MEAN
VINYL CHLORIDE	*0.00	*0.00	*0.00	0.04
1,1-DICHLOROETHYLENE	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE	0.00	0.00	0.00	0.00
CHLOROFORM	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE	0.00	0.07	0.00	0.00
BENZENE	4.27	2.26	1.62	2.92
CARBON TETRACHLORIDE	0.00	0.00	0.00	0.01
TRICHLOROETHYLENE	2.17	0.79	0.61	1.15
1,4-DIOXANE	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE	0.00	0.04	0.00	0.00
1,1,2-TRICHLOROETHANE	0.00	0.00	0.00	0.00
TOLUENE	6.40	6.50	6.59	11.03
1,2-DIBROMOETHANE	0.00	0.04	0.23	0.26
TETRACHLOROETHYLENE	0.97	0.62	0.46	2.00
CHLOROBENZENE	0.58	0.29	0.44	1.12
PARA/META XYLENES	1.90	3.05	3.33	3.88
ORTHO XYLENE	0.62	1.88	1.11	1.20
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.02	0.08
NITROBENZENE	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----NO CONCENTRATION OF THE COMPOUND WERE FOUND DURING THE QUARTER
N.J.I.T. AIR POLLUTION RESEARCH LAB

Table XX

Arithmetic Average of Concentration by Quarters (ppb)

1979

AT NEWARK

COMPOUND NAME	JAN-MARCH MEAN	APRIL-JUNE MEAN	JULY-SEPT MEAN	OCT-DEC MEAN
VINYL CHLORIDE	*0.00	*0.00	0.00	0.05
1,1-DICHLOROETHYLENE	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE	0.00	0.00	0.00	0.00
CHLOROFORM	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE	0.00	0.00	0.00	0.00
BENZENE	1.90	1.55	1.12	1.49
CARBON TETRACHLORIDE	0.00	0.00	0.00	0.01
TRICHLOROETHYLENE	0.61	0.27	0.08	0.21
1,4-DIOXANE	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE	0.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE	0.00	0.00	0.00	0.00
TOLUENE	2.98	1.48	1.99	3.53
1,2-DIBROMOETHANE	0.00	0.04	0.05	0.17
TETRACHLOROETHYLENE	0.53	0.14	0.39	2.49
CHLOROBENZENE	0.58	0.16	0.19	0.67
PARA/META XYLENES	1.80	1.22	1.35	4.28
ORTHO XYLENE	0.98	1.15	0.50	1.46
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.09
NITROBENZENE	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----NO CONCENTRATION OF THE COMPOUND WERE FOUND DURING THE QUARTER
N.J.I.T. AIR POLLUTION RESEARCH LAB

Table XX (cont)

Arithmetic Average of Concentration by Quarters (ppb)

1979

AT ELIZABETH

COMPOUND NAME	JAN-MARCH MEAN	APRIL-JUNE MEAN	JULY-SEPT MEAN	OCT-DEC MEAN
VINYL CHLORIDE	*0.00	*0.00	*0.00	0.05
1,1-DICHLOROETHYLENE	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE	0.00	0.00	0.00	0.00
CHLOROFORM	0.00	0.00	0.00	0.13
1,2-DICHLOROETHANE	0.00	0.00	0.00	3.96
BENZENE	7.98	3.91	8.24	0.01
CARBON TETRACHLORIDE	0.00	0.00	0.00	1.00
TRICHLOROETHYLENE	0.98	0.33	0.67	0.00
1,4-DIOXANE	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE	0.00	0.10	0.00	0.76
1,1,2-TRICHLOROETHANE	0.00	0.00	0.00	5.08
TOLUENE	5.09	2.36	12.38	0.28
1,2-DIBROMOETHANE	0.00	0.27	0.03	2.15
TETRACHLOROETHYLENE	1.96	0.54	1.31	0.77
CHLOROBENZENE	1.35	0.26	0.81	3.39
PARA/META XYLENES	3.20	2.55	7.55	1.36
ORTHO XYLENE	0.87	1.26	2.41	0.28
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00
NITROBENZENE	0.00	0.00	0.00	

*0.00-----NO ANALYSIS
0.00-----NO CONCENTRATION OF THE COMPOUND WERE FOUND DURING THE QUARTER
N.J.I.T. AIR POLLUTION RESEARCH LAB

Table XX (cont)

Arithmetic Average of Concentration by Quarters (ppb)

1979

AT SOUTH AMBOY

COMPOUND NAME	JAN-MARCH MEAN	APRIL-JUNE MEAN	JULY-SEPT MEAN	OCT-DEC MEAN
VINYL CHLORIDE	*0.00	*0.00	0.01	0.02
1,1-DICHLOROETHYLENE	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE	0.00	0.00	0.00	0.00
CHLOROFORM	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE	0.00	0.00	0.00	0.00
BENZENE	2.19	1.28	0.92	0.60
CARBON TETRACHLORIDE	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE	1.33	0.38	0.11	0.00
1,4-DIOXANE	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE	0.00	0.01	0.00	0.00
1,1,2-TRICHLOROETHANE	0.00	0.00	0.00	0.00
TOLUENE	2.12	2.29	2.64	1.47
1,2-DIBROMOETHANE	0.00	0.11	0.11	0.00
TETRACHLOROETHYLENE	0.58	0.24	0.03	0.11
CHLOROBENZENE	0.57	0.17	0.24	0.12
PARA/META XYLENES	0.00	0.93	1.38	1.12
ORTHO XYLENE	0.00	0.36	0.48	0.50
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00
NITROBENZENE	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----NO CONCENTRATION OF THE COMPOUND WERE FOUND DURING THE QUARTER
N.J.I.T. AIR POLLUTION RESEARCH LAB

Table XX (cont)

Arithmetic Average of Concentration by Quarters (ppb)

1979

AT BATSTO

COMPOUND NAME	JAN-MARCH MEAN	APRIL-JUNE MEAN	JULY-SEPT MEAN	OCT-DEC MEAN
VINYL CHLORIDE	*0.00	*0.00	0.00	0.00
1,1-DICHLOROETHYLENE	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE	0.00	0.00	0.00	0.00
CHLOROFORM	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE	0.00	0.00	0.00	0.00
BENZENE	0.20	0.64	0.43	0.69
CARBON TETRACHLORIDE	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE	0.37	0.22	0.00	0.01
1,4-DIOXANE	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE	0.02	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE	0.00	0.00	0.00	0.00
TOLUENE	0.17	0.77	0.63	0.55
1,2-DIBROMOETHANE	0.00	0.00	0.00	0.00
TETRACHLOROETHYLENE	0.01	0.04	0.02	0.07
CHLOROBENZENE	0.47	0.72	0.21	0.11
PARA/META XYLENES	0.36	0.28	0.19	0.30
ORTHO XYLENE	0.15	0.05	0.16	0.15
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.05	0.00
NITROBENZENE	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----NO CONCENTRATION OF THE COMPOUND WERE FOUND DURING THE QUARTER
N.J.I.T. AIR POLLUTION RESEARCH LAB

Table XX (cont)

Arithmetic Average of Concentration by Quarters (ppb)

1979

AT CAMDEN

COMPOUND NAME	JAN-MARCH MEAN	APRIL-JUNE MEAN	JULY-SEPT MEAN	OCT-DEC MEAN
VINYL CHLORIDE	*0.00	*0.00	0.01	0.32
1,1-DICHLOROETHYLENE	*0.00	0.00	0.00	0.00
METHYL ETHYL KETONE	*0.00	0.00	0.00	*0.00
CHLOROFORM	*0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE	*0.00	0.00	0.00	0.00
BENZENE	*0.00	2.27	0.98	1.81
CARBON TETRACHLORIDE	*0.00	0.00	0.00	0.01
TRICHLOROETHYLENE	*0.00	0.35	0.35	1.20
1,4-DIOXANE	*0.00	0.00	0.00	*0.00
METHYL ISOBUTYL KETONE	*0.00	0.00	0.00	*0.00
1,1,2-TRICHLOROETHANE	*0.00	0.00	0.00	0.00
TOLUENE	*0.00	2.86	6.81	20.45
1,2-DIBROMOETHANE	*0.00	0.71	0.05	0.75
TETRACHLOROETHYLENE	*0.00	0.31	0.53	15.55
CHLOROBENZENE	*0.00	0.94	0.75	0.88
PARA/META XYLENES	*0.00	1.90	6.52	18.95
ORTHO XYLENE	*0.00	1.28	1.66	7.98
1,1,2,2TETRACHLOROETHANE	*0.00	0.00	0.00	0.01
NITROBENZENE	*0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----NO CONCENTRATION OF THE COMPOUND WERE FOUND DURING THE QUARTER
N.J.I.T. AIR POLLUTION RESEARCH LAB

Table XX (cont)

Arithmetic Average of Concentration by Quarters (ppb)

1980

AT RUTHERFORD

COMPOUND NAME	JAN-MARCH MEAN	APRIL-JUNE MEAN	JULY-SEPT MEAN	OCT-DEC MEAN
VINYL CHLORIDE...........	0.00	0.00	3.50	0.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	*0.00	0.00
CHLOROFORM..............	0.01	0.51	0.62	*0.00
BENZENE.................	2.93	2.49	2.52	0.61
CARBON TETRACHLORIDE....	0.01	0.17	0.07	3.47
TRICHLOROETHYLENE.......	1.15	0.61	0.83	0.03
1,1,2-TRICHLOROETHANE...	0.01	0.09	0.17	0.19
TOLUENE.................	5.49	18.70	7.98	0.00
1,2-DIBROMOETHANE.......	0.43	0.03	0.03	6.63
TETRACHLOROETHYLENE.....	1.86	1.86	1.08	0.01
CHLOROBENZENE...........	0.52	0.60	0.15	0.77
ETHYL BENZENE...........	0.89	1.14	0.73	0.12
PARA/META XYLENES	2.32	3.53	2.24	0.83
ORTHO XYLENE	0.70	1.66	0.72	2.14
1,1,2,2TETRACHLOROETHANE	0.00	0.05	0.17	0.65
NITROBENZENE............	0.00	0.00	0.93	0.01
STYRENE.................	*0.00	0.43	0.30	0.03
O-CHLOROTOLUENE.........	*0.00	0.11	0.06	0.28
P-CHLOROTOLUENE.........	*0.00	0.12	0.12	0.12
P-DICHLOROBENZENE.......	*0.00	0.00	0.04	0.15
O-DICHLOROBENZENE.......	*0.00	0.00	0.04	0.04
				0.02

*0.00-----NO ANALYSIS

0.00-----NO CONCENTRATION OF THE COMPOUND WERE FOUND DURING THE QUARTER

N.J.I.T. AIR POLLUTION RESEARCH LAB

Table XX (cont)

Arithmetic Average of Concentration by Quarters (ppb)

1980

COMPOUND NAME	AT BATSTO JAN-MARCH MEAN	APRIL-JUNE MEAN	JULY-SEPT MEAN	OCT-DEC MEAN
VINYL CHLORIDE..........	0.00	0.00	20.99	*0.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	*0.00	*0.00
CHLOROFORM..............	0.01	0.05	0.80	0.08
BENZENE.................	1.58	1.12	1.21	0.55
CARBON TETRACHLORIDE....	0.01	0.07	0.06	0.01
TRICHLOROETHYLENE.......	0.35	0.07	0.11	0.00
1,1,2-TRICHLOROETHANE...	0.05	0.13	0.14	0.00
TOLUENE.................	1.68	2.74	2.20	0.82
1,2-DIBROMOETHANE.......	0.05	0.05	0.06	0.00
TETRACHLOROETHYLENE.....	0.72	0.30	0.21	0.03
CHLOROBENZENE...........	0.24	0.13	0.17	0.00
ETHYL BENZENE...........	0.30	0.18	0.33	0.05
PARA/META XYLENES	0.55	0.55	1.09	0.25
ORTHO XYLENE	0.23	0.32	0.76	0.02
1,1,2,2TETRACHLOROETHANE	0.00	0.06	0.24	0.00
NITROBENZENE............	0.00	0.00	0.16	0.00
STYRENE.................	*0.00	0.07	0.60	0.01
O-CHLOROTOLUENE.........	*0.00	0.14	0.16	0.00
P-CHLOROTOLUENE.........	*0.00	0.08	0.27	0.00
P-DICHLOROBENZENE.......	*0.00	0.01	0.42	0.00
O-DICHLOROBENZENE.......	*0.00	0.00	0.07	0.00

*0.00-----NO ANALYSIS
0.00-----NO CONCENTRATION OF THE COMPOUND WERE FOUND DURING THE QUARTER
N.J.I.T. AIR POLLUTION RESEARCH LAB

Table XX (cont)

behavior in the trapping and desorption could not be assessed. Therefore, no data were reported for this compound.

On the other hand, chloroform and nitrobenzene appeared to be more prevalent than the reported data would indicate. Most of the GC/MS analyses showed these two compounds to be present at low concentrations. Improvements in the analytical technique, especially the changes in temperature program and GC column improved the detection of these compounds in the latter part of 1980.

Arithmetic and geometric averages for Rutherford and Batsto during 1980 are tabulated in Tables XXI and XXII. The data obtained at these sites confirms the large difference in overall pollution levels between them. Both sites showed an average toluene level which was higher than any other compound, with benzene about two-thirds as high as the toluene. Rutherford showed levels of the most concentrated compounds which were at least three times higher than those at Batsto, except for chlorobenzene, which was comparable at the two sites. This relatively elevated concentration of chlorobenzene was noted in the previous year also, but its source remains unexplained. The overall average concentration of the seven most commonly detected compounds at the sites during 1979 and 1980 is displayed in Figures 20 and 21.

The data from the Staten Island sampling in 1981 does not seem to confirm the theory that much of the volatile organic vapor content of the air in Staten Island is transported from the industrial area west of the Arthur Kill. The overall levels of organic vapors found in the two Staten Island sites were significantly lower than those detected in northern Manhattan. All the compounds detected at levels above 0.1 ppb at Travis were higher in Manhattan, frequently substantially higher. Mariner's Harbor showed higher levels than did Travis, but lower than Yorkville in Manhattan, except for tetrachloroethylene, which was 2 ppb at both sites. The average levels found at these sites are graphed in Figures 22, 23, and 24.

WIND AND CONCENTRATION RELATIONSHIPS

The relationship between wind direction and the average concentrations for the most frequently observed compounds, benzene, toluene, xylenes, chlorobenzene, trichloroethylene and tetrachloroethylene is displayed graphically in Figures 25 to 32. Meteorological data from Newark Airport was used to obtain the wind direction during the 24 hours of sample collection. Samples taken on days when the wind did not vary out of a single 90° quadrant during collection were selected from the year's samples. These samples were classified into four quadrants centering on the northwest, southwest, northeast and southeasterly wind directions respectively. A finer 45° division was not deemed advisable, as the numbers of samples in each group became too small for statistical significance. All samples at the individual sites showing this consistent wind pattern were averaged for each compound. The circle in each diagram signifies 0.5 or 5.0 ppb by volume, as labeled, with the origin equalling zero concentration.

Arithmetic Averages of Concentrations (ppb)

1980

COMPOUND NAME	AT:RUTHERFORD		AT:BATSTO	
	MEAN	ST.DEV.	MEAN	ST.DEV.
VINYL CHLORIDE...........	0.88	4.94	6.22	17.93
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	0.00
CHLOROFORM.............	0.42	0.96	0.25	0.43
BENZENE................	2.78	1.83	1.19	0.70
CARBON TETRACHLORIDE....	0.08	0.20	0.04	0.05
TRICHLOROETHYLENE.......	0.76	1.01	0.15	0.35
1,1,2-TRICHLOROETHANE...	0.08	0.25	0.09	0.21
TOLUENE................	10.21	24.15	2.03	1.85
1,2-DIBROMOETHANE.......	0.13	0.47	0.05	0.12
TETRACHLOROETHYLENE.....	1.47	1.79	0.35	0.43
CHLOROBENZENE...........	0.38	0.75	0.15	0.22
ETHYL BENZENE...........	0.91	1.05	0.24	0.28
PARA/META XYLENES	2.63	3.55	0.66	0.90
ORTHO XYLENE	0.99	2.05	0.38	0.81
1,1,2,2TETRACHLOROETHANE	0.06	0.24	0.09	0.34
NITROBENZENE............	0.23	1.05	0.05	0.14
STYRENE................	0.32	0.39	0.31	0.77
O-CHLOROTOLUENE.........	0.09	0.13	0.13	0.27
P-CHLOROTOLUENE.........	0.13	0.15	0.17	0.55
P-DICHLOROBENZENE.......	0.03	0.05	0.21	0.63
O-DICHLOROBENZENE.......	0.02	0.05	0.04	0.10

*0.00-----NO ANALYSIS
0.00-----NO CONCENTRATION OF THE COMPOUND WERE FOUND DURING THE CAMPAIGN

N.J.I.T. AIR POLLUTION RESEARCH LAB

GEOMETRIC AVERAGES OF SELECTED VOLATILE ORGANIC SUBSTANCE CONCENTRATIONS IN NEW JERSEY, 1980

	Rutherford	Batsto
VINYL CHLORIDE...........	0.00	0.01
1,1-DICHLOROETHYLENE....	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00
CHLOROFORM.............	0.05	0.04
BENZENE................	1.93	0.87
CARBON TETRACHLORIDE....	0.02	0.02
TRICHLOROETHYLENE.......	0.19	0.03
1,1,2-TRICHLOROETHANE...	0.01	0.01
TOLUENE................	4.40	1.44
1,2-DIBROMOETHANE.......	0.01	0.01
TETRACHLOROETHYLENE.....	0.71	0.13
CHLOROBENZENE...........	0.10	0.05
ETHYL BENZENE...........	0.52	0.11
PARA/META XYLENES	1.33	0.36
ORTHO XYLENE	0.46	0.10
1,1,2,2TETRACHLOROETHANE	0.01	0.01
NITROBENZENE............	0.01	0.00
STYRENE................	0.17	0.06
O-CHLOROTOLUENE.........	0.03	0.02
P-CHLOROTOLUENE.........	0.03	0.01
P-DICHLOROBENZENE.......	0.01	0.01
O-DICHLOROBENZENE.......	0.01	0.01

Concentrations in parts per billion
0.00 indicates that the geometric mean was below 0.005 ppb.
Daily concentrations reported as "not detected" are averaged here as 0.0025 ppb
Daily concentrations reported as "trace" are averaged as 0.01 ppb

Table XXII

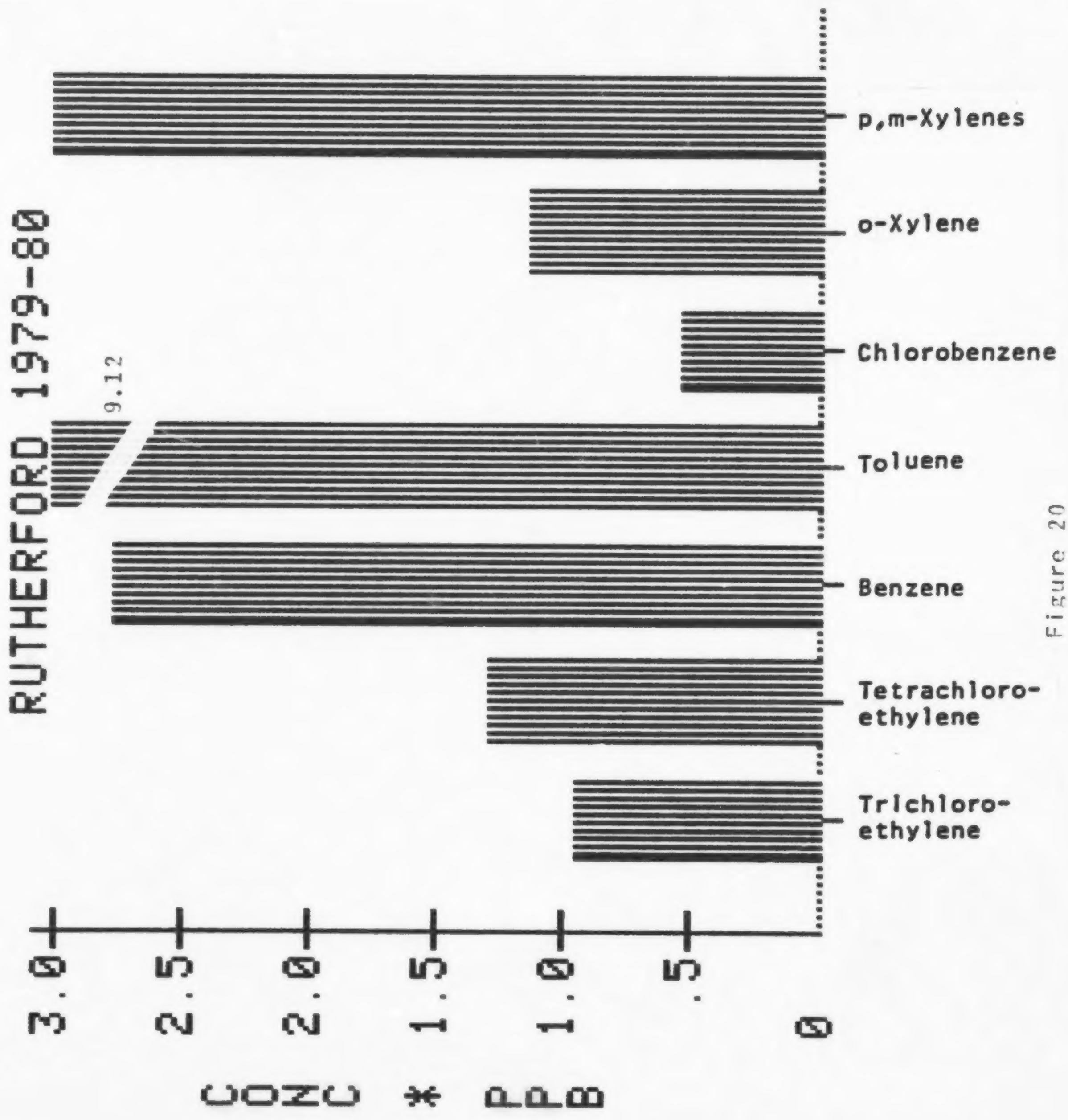

RUTHERFORD 1979-80
CONC * PPB
3.0
2.5
2.0
1.5
1.0
.5
0
9.12
p,m-Xylenes
o-Xylene
Chlorobenzene
Toluene
Benzene
Tetrachloro-ethylene
Trichloro-ethylene

Figure 20

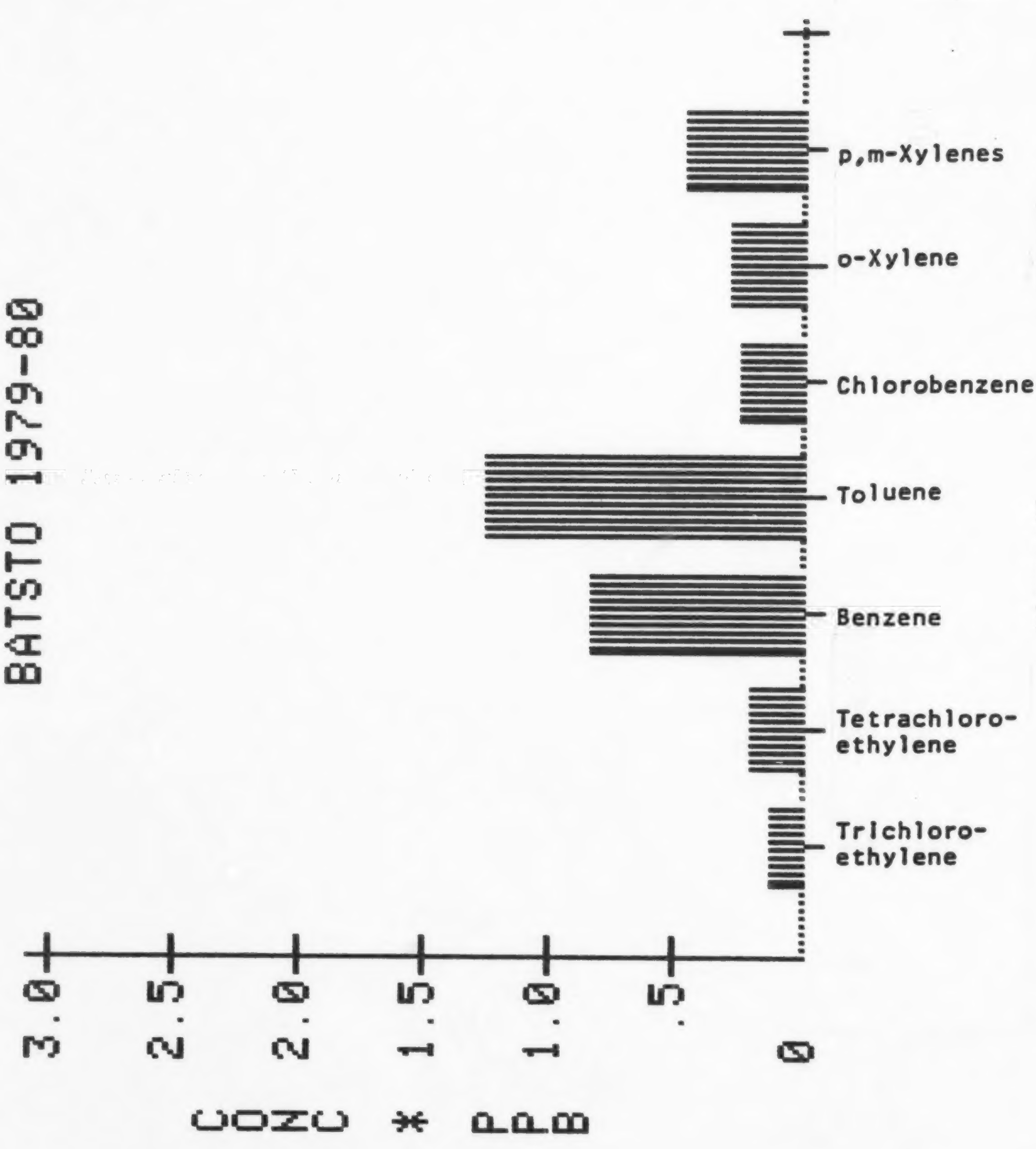

BATSTO 1979-80
CONC * PPB
3.0
2.5
2.0
1.5
1.0
.5
0
p,m-Xylenes
o-Xylene
Chlorobenzene
Toluene
Benzene
Tetrachloro-ethylene
Trichloro-ethylene

Figure 21

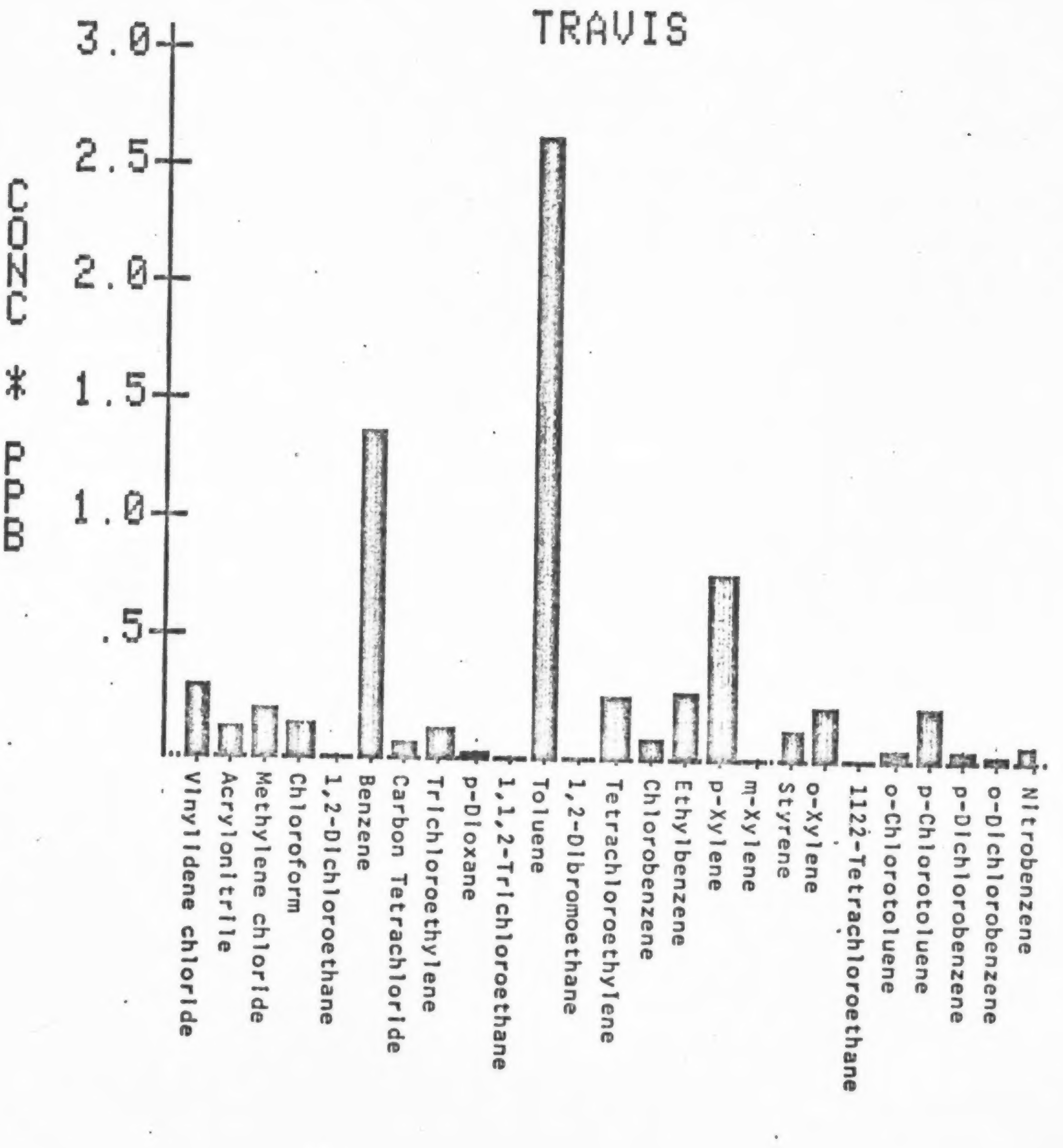

TRAVIS
CONC * PPB
3.0
2.5
2.0
1.5
1.0
.5
Vinylidene chloride
Acrylonitrile
Methylene chloride
Chloroform
1,2-Dichloroethane
Benzene
Carbon Tetrachloride
Trichloroethylene
p-Dioxane
1,1,2-Trichloroethane
Toluene
1,2-Dibromoethane
Tetrachloroethylene
Chlorobenzene
Ethylbenzene
p-Xylene
m-Xylene
Styrene
o-Xylene
1122-Tetrachloroethane
o-Chlorotoluene
p-Chlorotoluene
p-Dichlorobenzene
o-Dichlorobenzene
Nitrobenzene

Figure 22

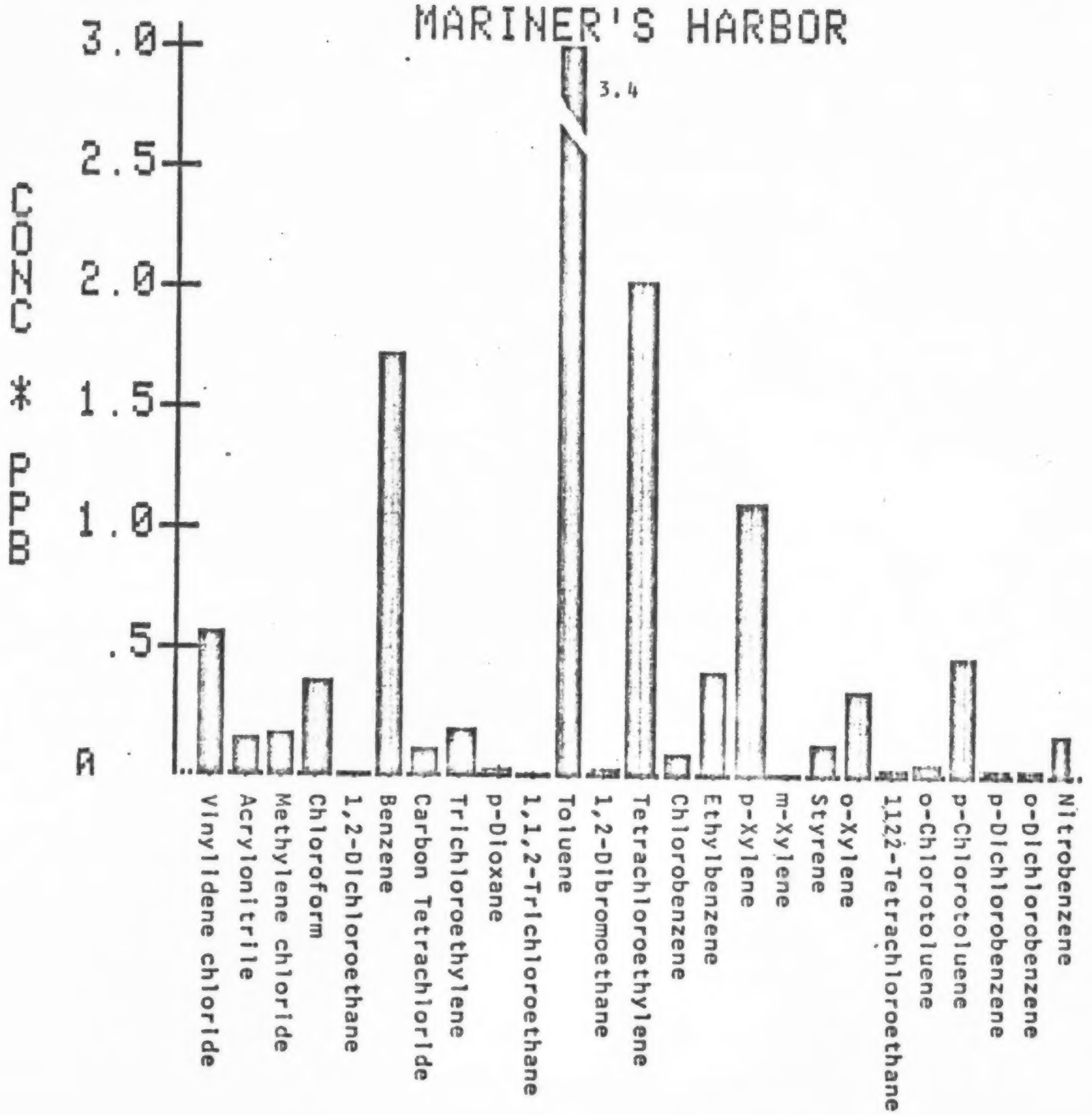

MARINER'S HARBOR
CONC * PPB
3.0
2.5
2.0
1.5
1.0
.5
0
3.4
Vinylidene chloride
Acrylonitrile
Methylene chloride
Chloroform
1,2-Dichloroethane
Benzene
Carbon Tetrachloride
Trichloroethylene
p-Dioxane
1,1,2-Trichloroethane
Toluene
1,2-Dibromoethane
Tetrachloroethylene
Chlorobenzene
Ethylbenzene
p-Xylene
m-Xylene
Styrene
o-Xylene
1122-Tetrachloroethane
o-Chlorotoluene
p-Chlorotoluene
p-Dichlorobenzene
o-Dichlorobenzene
Nitrobenzene

Figure 23

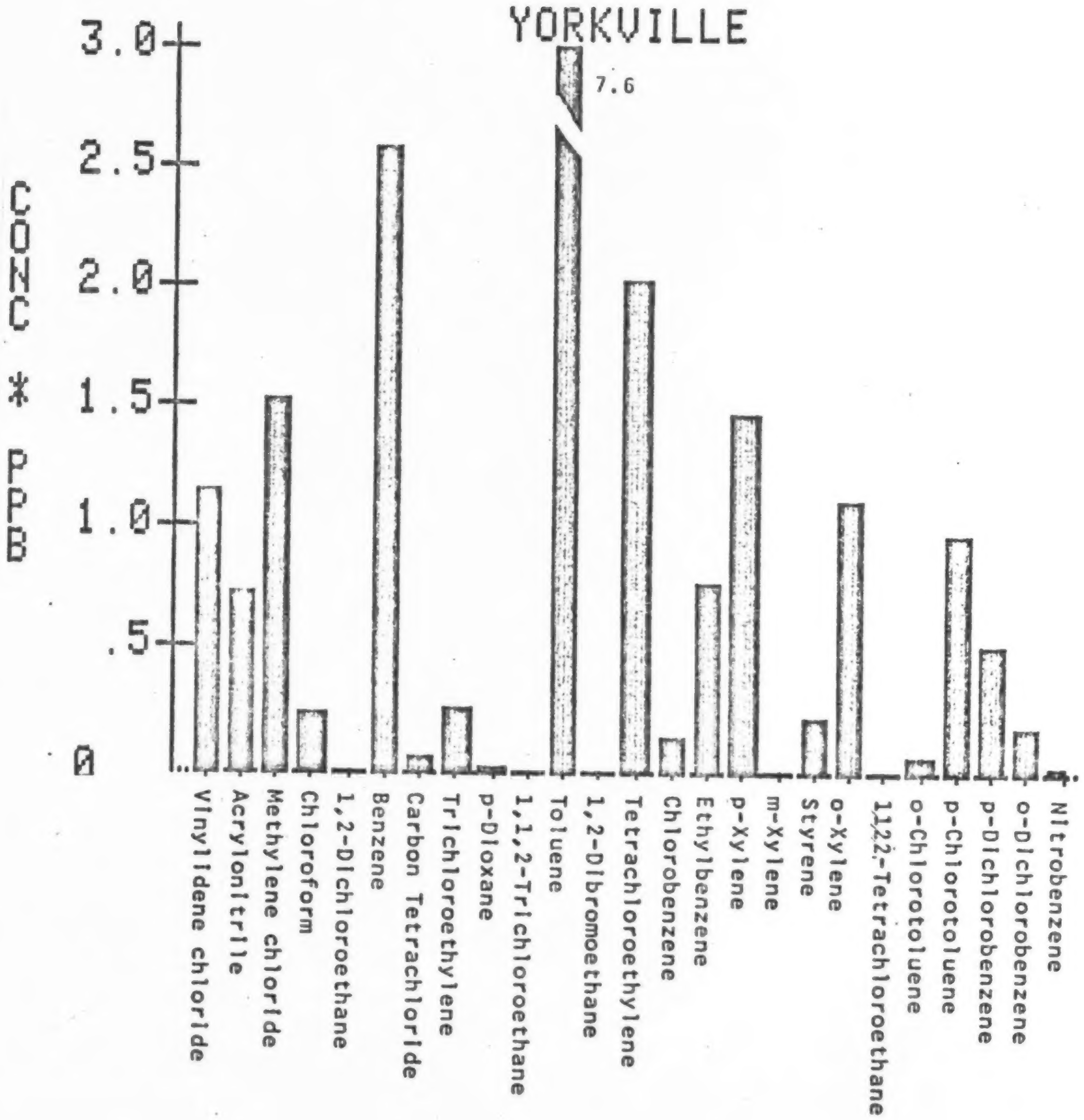
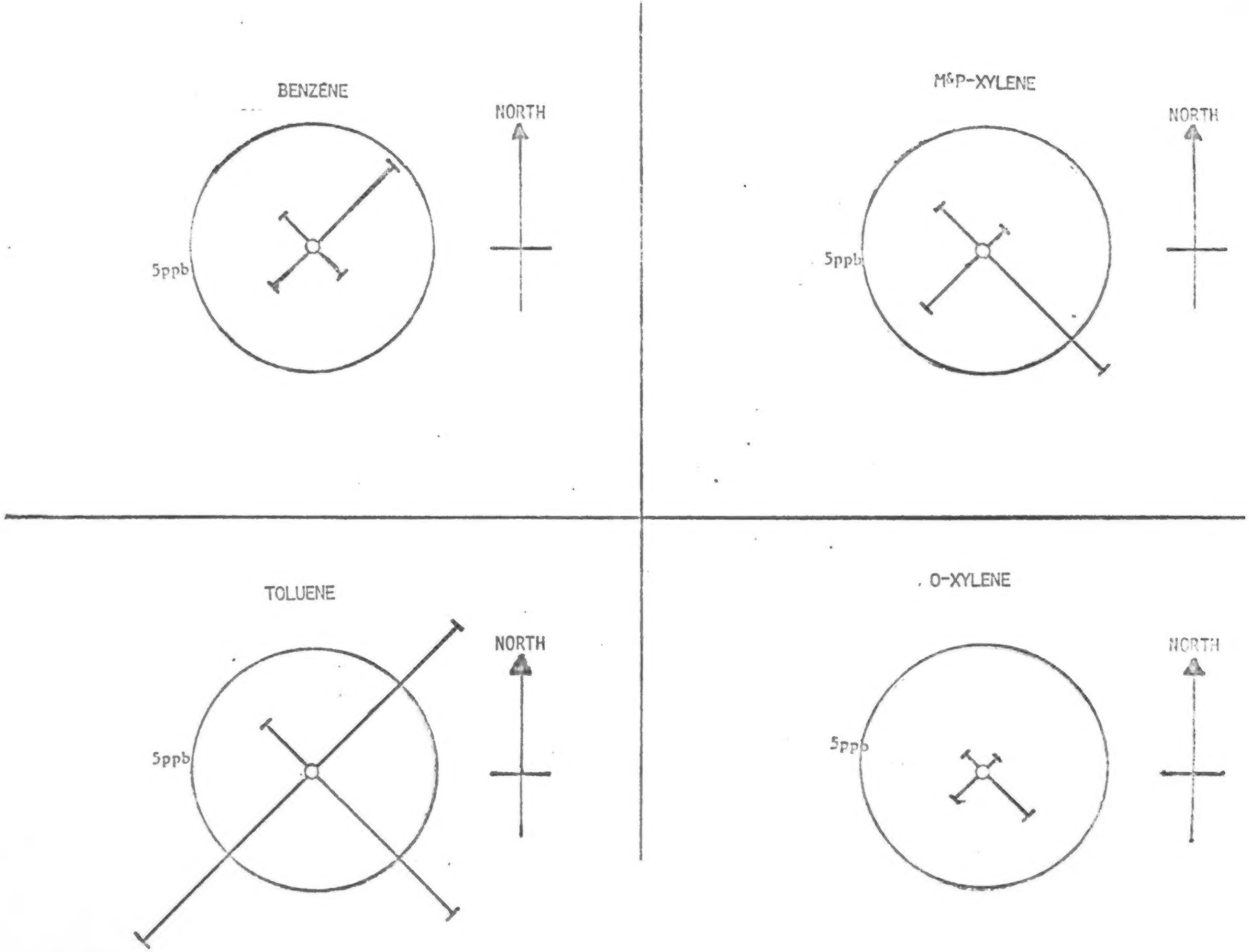
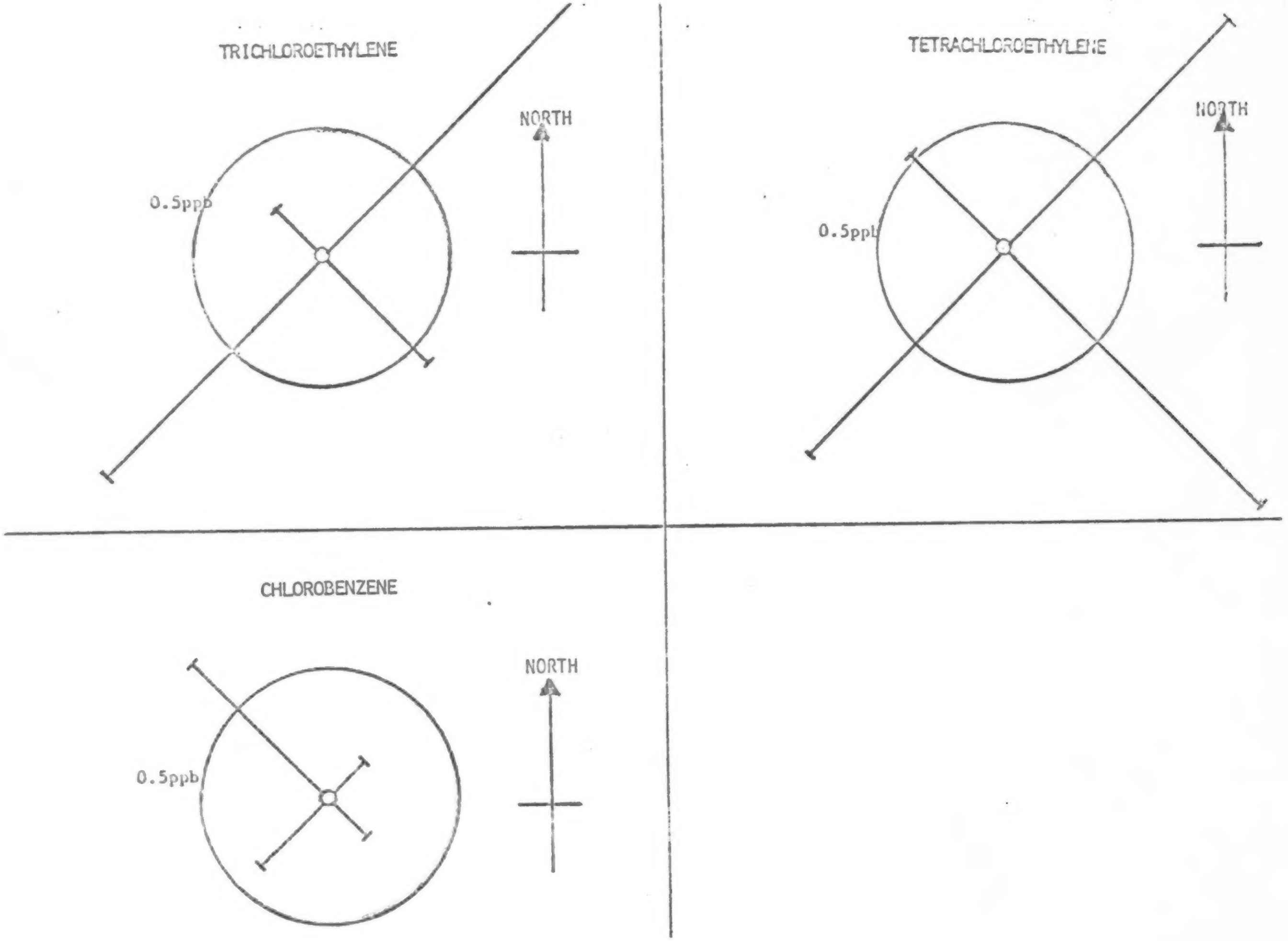

YORKVILLE
CONC * PPB
3.0
2.5
2.0
1.5
1.0
.5
0
7.6
Vinylidene chloride
Acrylonitrile
Methylene chloride
Chloroform
1,2-Dichloroethane
Benzene
Carbon Tetrachloride
Trichloroethylene
p-Dioxane
1,1,2-Trichloroethane
Toluene
1,2-Dibromoethane
Tetrachloroethylene
Chlorobenzene
Ethylbenzene
p-Xylene
m-Xylene
Styrene
o-Xylene
1122-Tetrachloroethane
o-Chlorotoluene
p-Chlorotoluene
p-Dichlorobenzene
o-Dichlorobenzene
Nitrobenzene

Figure 24

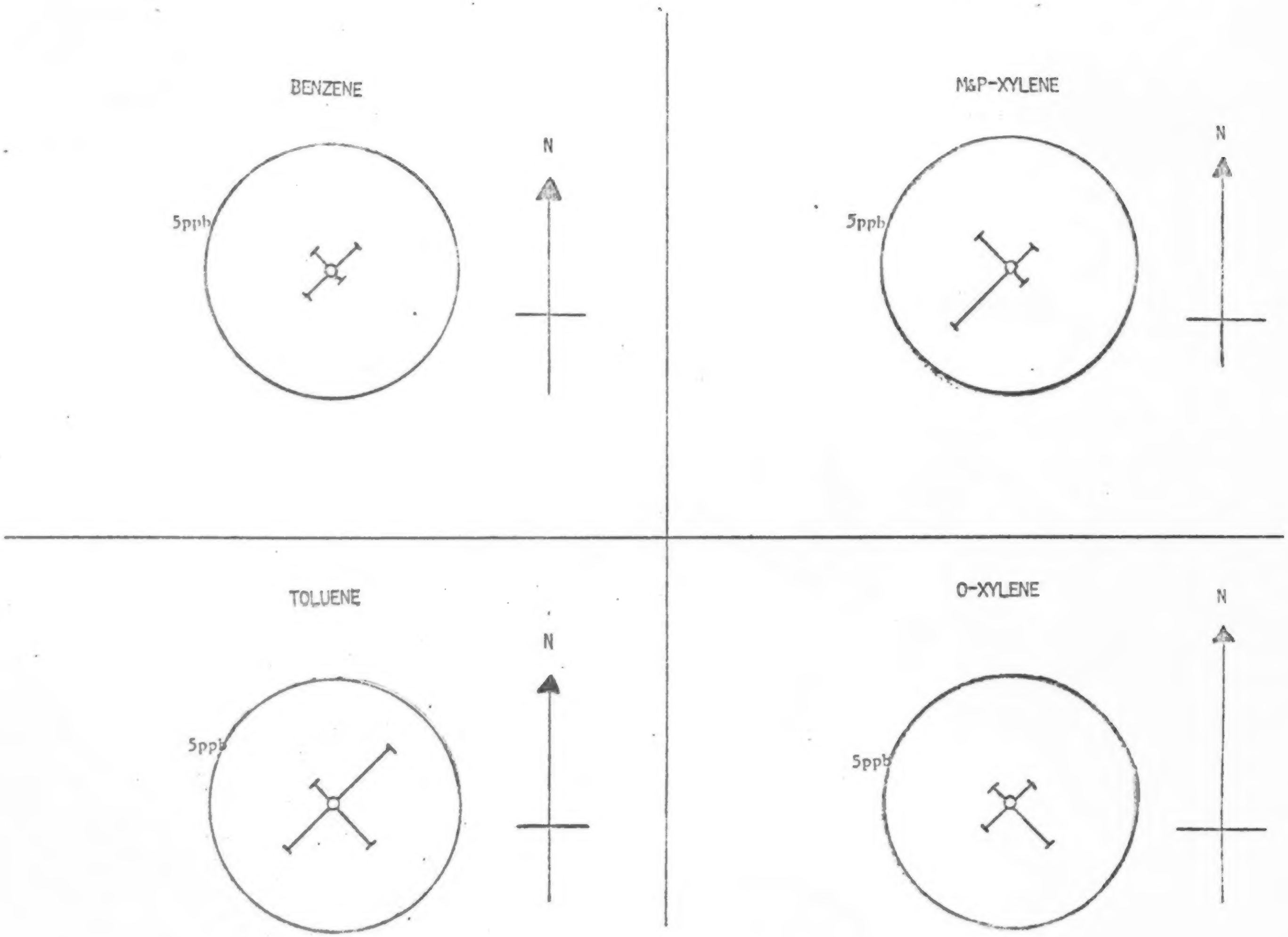


AVERAGE CONCENTRATIONS AT RUTHERFORD UNDER STEADY WIND CONDITIONS

Figure 25

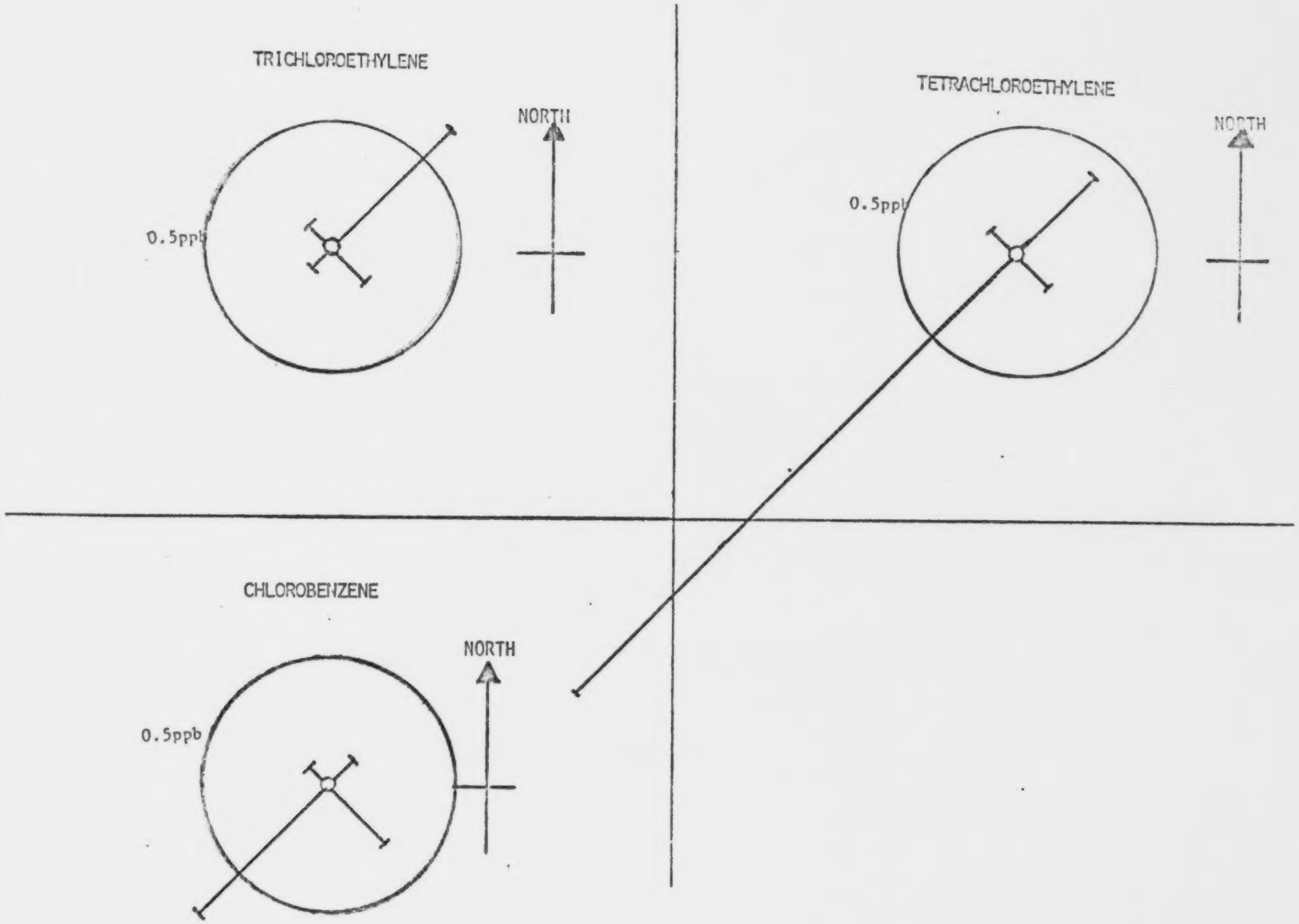


AVERAGE CONCENTRATIONS AT RUTHERFORD UNDER STEADY WIND CONDITIONS
Figure 26



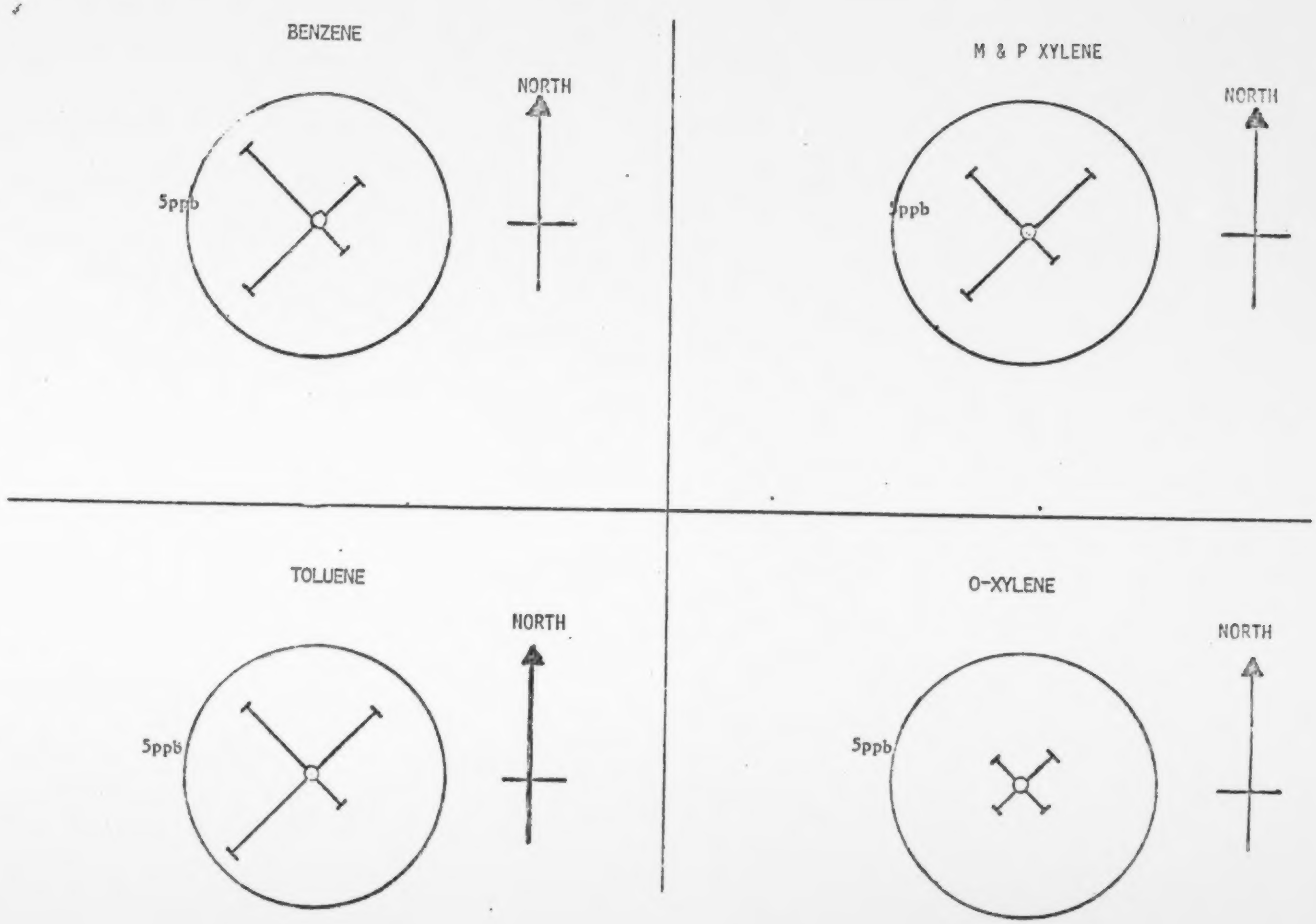
AVERAGE CONCENTRATIONS AT NEWARK UNDER STEADY WIND CONDITIONS

Figure 27



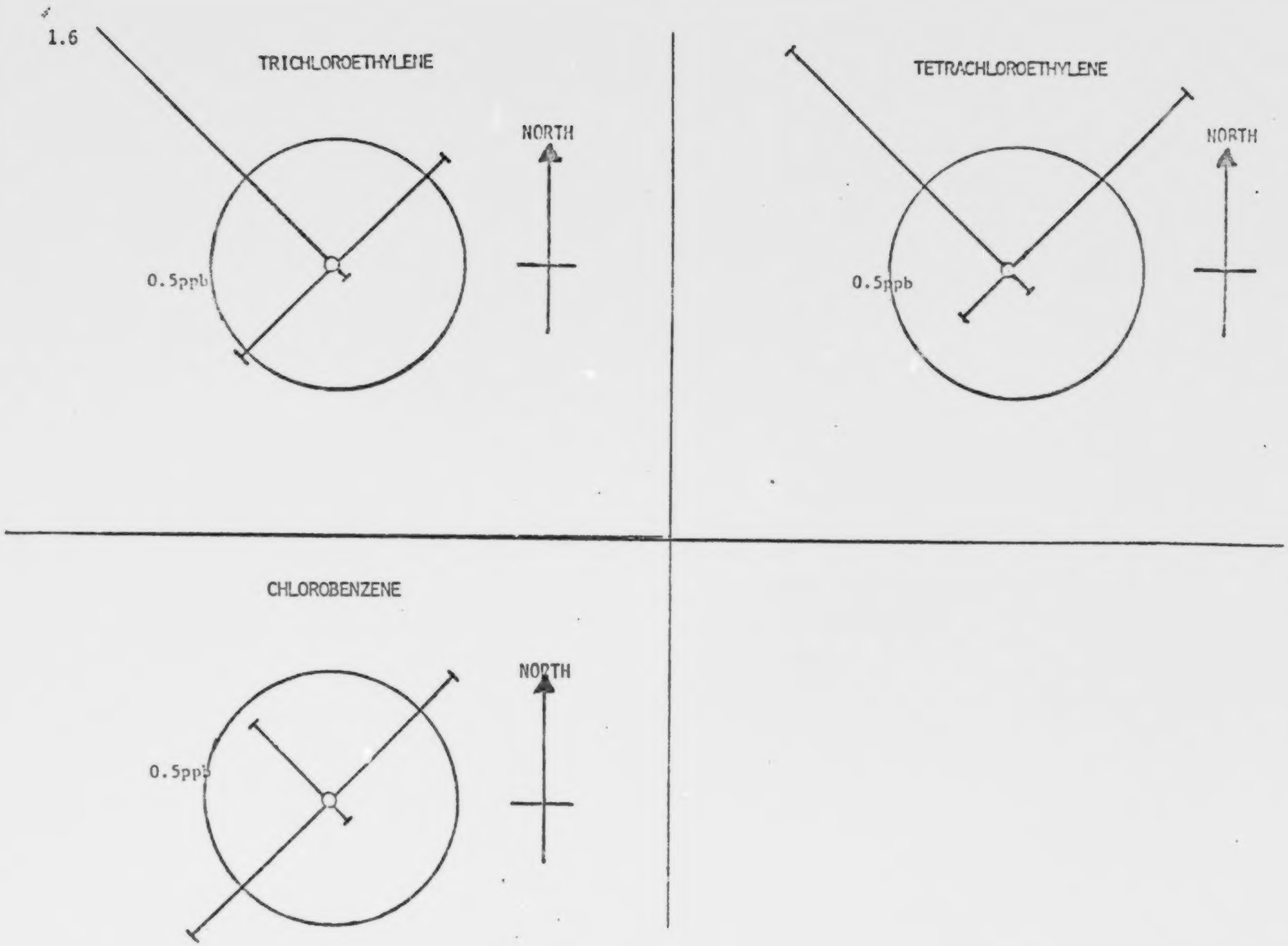
AVERAGE CONCENTRATIONS AT NEWARK UNDER STEADY WIND CONDITIONS

Figure 28



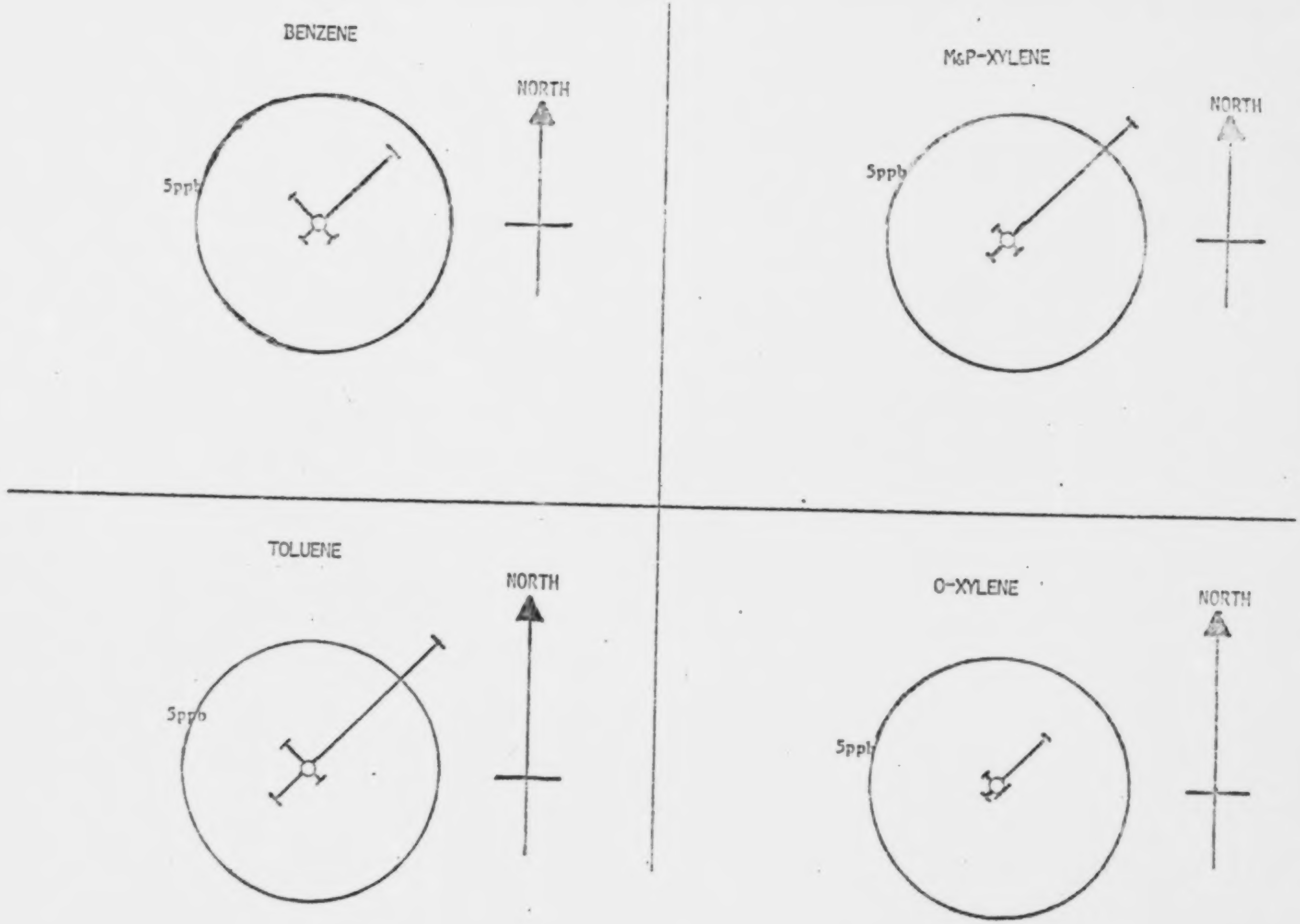
AVERAGE CONCENTRATIONS AT ELIZABETH UNDER STEADY WIND CONDITIONS

Figure 29



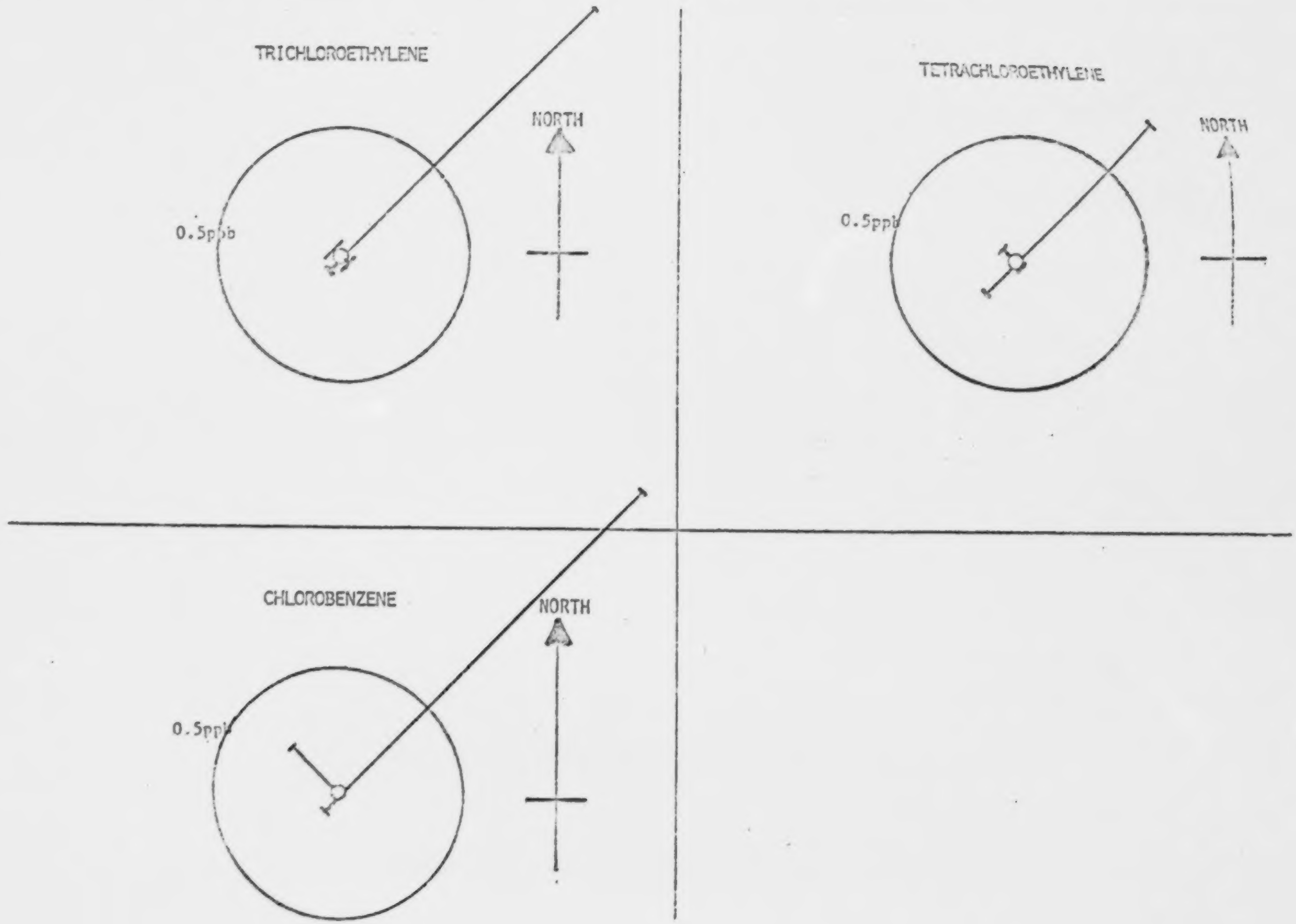
AVERAGE CONCENTRATIONS AT ELIZABETH UNDER STEADY WIND CONDITIONS

Figure 30



AVERAGE CONCENTRATIONS AT SOUTH AMBOY UNDER STEADY WIND CONDITIONS

Figure 31



AVERAGE CONCENTRATIONS AT SOUTH AMBOY UNDER STEADY WIND CONDITIONS
Figure 32

The most interesting trends arising from this "pollution rose" treatment are evident at the South Amboy site. Every one of the eight compounds plotted shows the highest average concentration being brought in on winds from the northeast. In that quadrant lie the heavily industrialized urban regions of Elizabeth, Linden, Perth Amboy, etc.

The sampling locations of Elizabeth, Newark and Rutherford, for which the Newark Airport Meteorological data is also relevant, show more even distributions of the pollutant levels with wind direction. The Elizabeth site does show consistently lower pollution levels when winds are from southeast. This site in Elizabeth is actually located near the Linden-Elizabeth border about one quarter mile east of the Goethals Bridge, northwest of Staten Island.

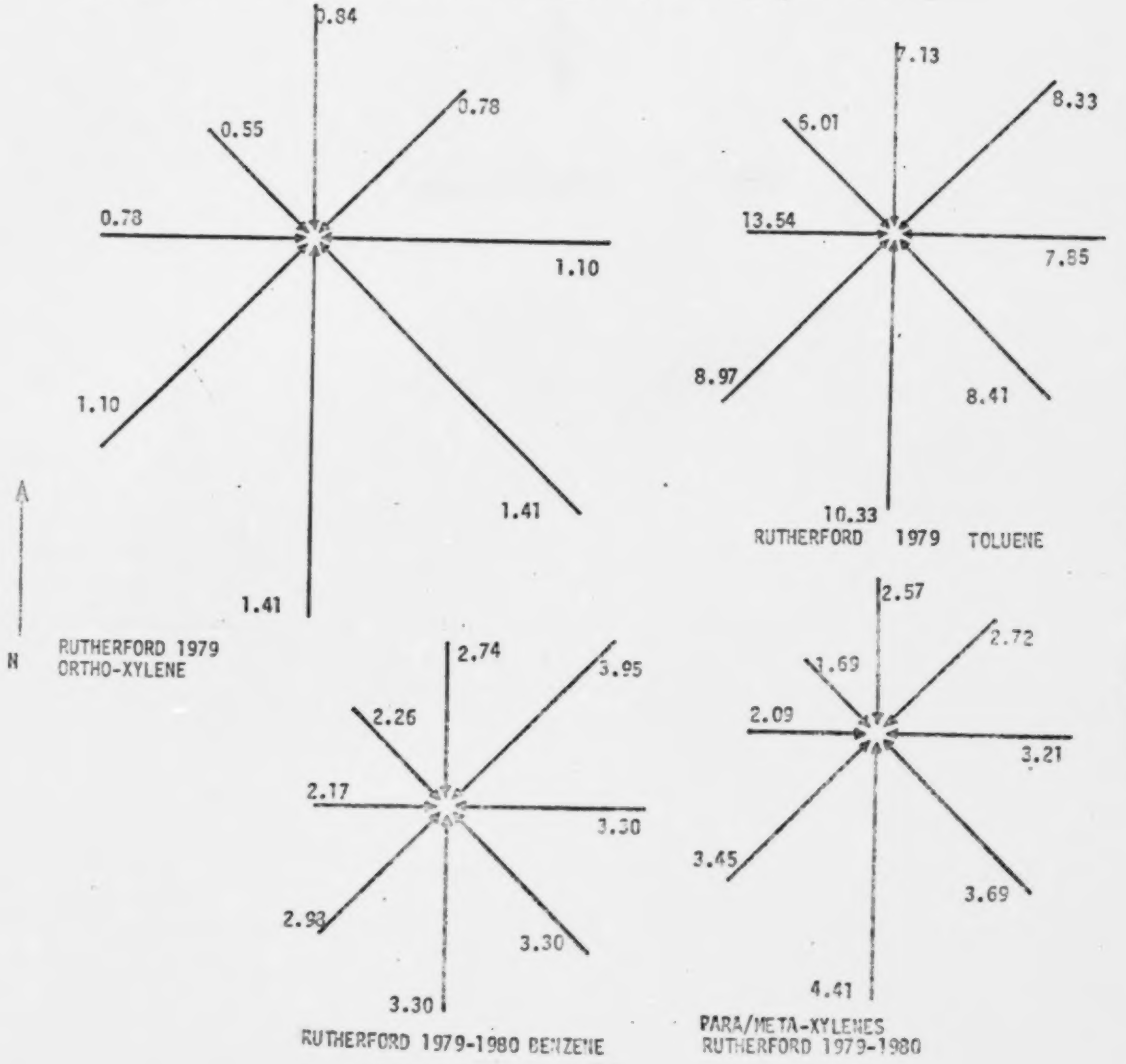
While this method permitted pollutant concentration analysis with respect to wind direction, data could only be used when the wind direction did not vary out of the quadrant during the day. This limitation excluded the largest fraction of the data. A scheme was devised to utilize all the data collected at the each site over the period of sample collection. This scheme and the results obtained are comprised of all the data we obtained. Acknowledgement is made however that in unique cases the assumptions utilized may lead to possible error. Interpretation of the results includes discussion concerning this possible error.

Data on the average wind direction during 3 hour periods was obtained from the Newark International Airport Meteorological Station and from the Philadelphia International Airport Meteorological Station for each sampling day. Wind directions were classified into 8 vectors: north, northeast, east, southeast, south, southwest, west, and northwest. For example, a direction of east was assigned when the wind was within the angle sector of 90 ± 22.5 according to the United States Meteorological Service data.

These 3 hour average wind directions corresponded to the specific sampling time frame of each day and a number, WN(1) was then calculated for the number of 3 hour periods that the wind orginated from a given 45 degree sector. The index I varied from 1 to 8 and corresponded to the wind directions north, northeast, east continuing through northwest respectively. An example of the number of periods corresponding to each wind direction for a 24 hour sample might typically consist of 4 from the south, WN(5), 2 from the southwest WN(6) and 2 from the northwest WN(8), all to other WN(I) would be then zero. Newark airport data was utilized for the sites: Rutherford, Newark, Elizabeth and South Amboy. Philadephia meteorological data was used for the Batsto Village (Pinelands) and Camden locations.

The average concentration of each pollutant for a specific day and site was then assigned with equal weight to each 3 hour wind directions for that day and site. This is an assumption which states that the pollutant concentration for each wind direction was the same over the course of sampling period. While this is not usually the case, the wind directions usually remained consistent over a given sampling period, for example, from the

Average Concentration of Aromatic Hydrocarbons vs. Wind Direction at Rutherford(8 Vectors)



RUTHERFORD 1979
ORTHO-XYLENE

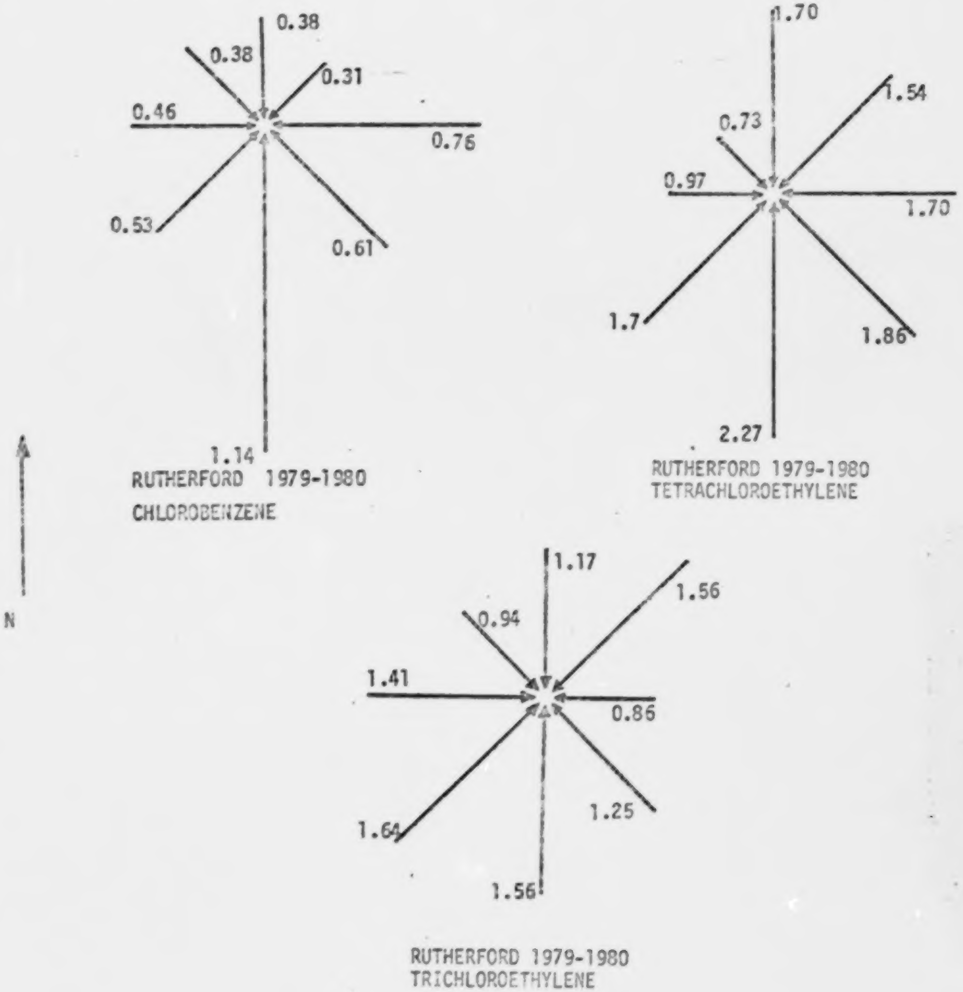
RUTHERFORD 1979 TOLUENE

RUTHERFORD 1979-1980 BENZENE

PARA/META-XYLENES
RUTHERFORD 1979-1980

Figure 33

Average Concentration of Chlorinated Hydrocarbons vs. Wind Direction at Rutherford(8 Vectors)



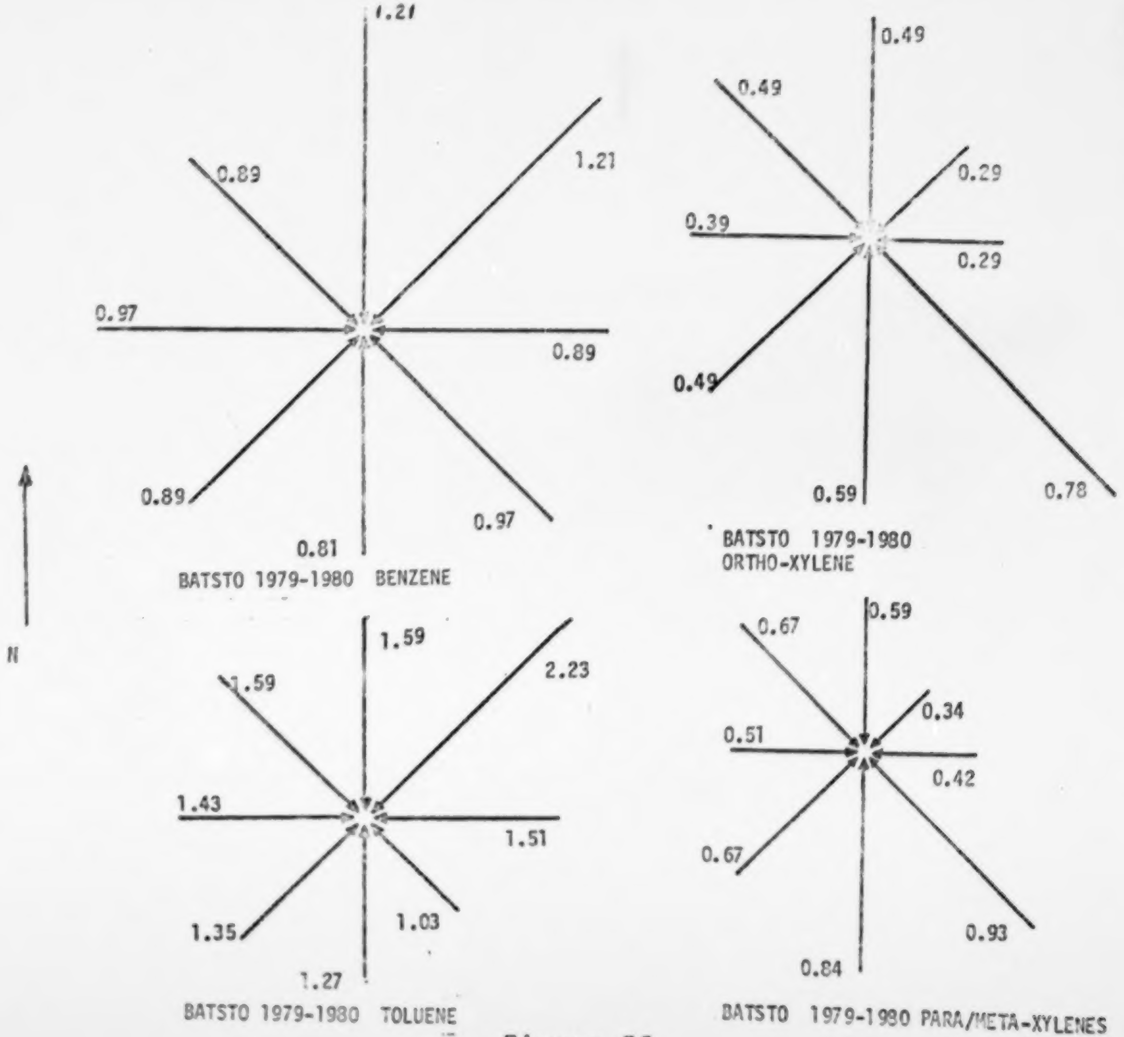
RUTHERFORD 1979-1980
CHLOROBENZENE

RUTHERFORD 1979-1980
TETRACHLOROETHYLENE

RUTHERFORD 1979-1980
TRICHLOROETHYLENE

Figure 34

Average Concentration of Aromatic Hydrocarbons
vs. Wind Direction at Batsto(8 Vectors)



BATSTO 1979-1980 BENZENE

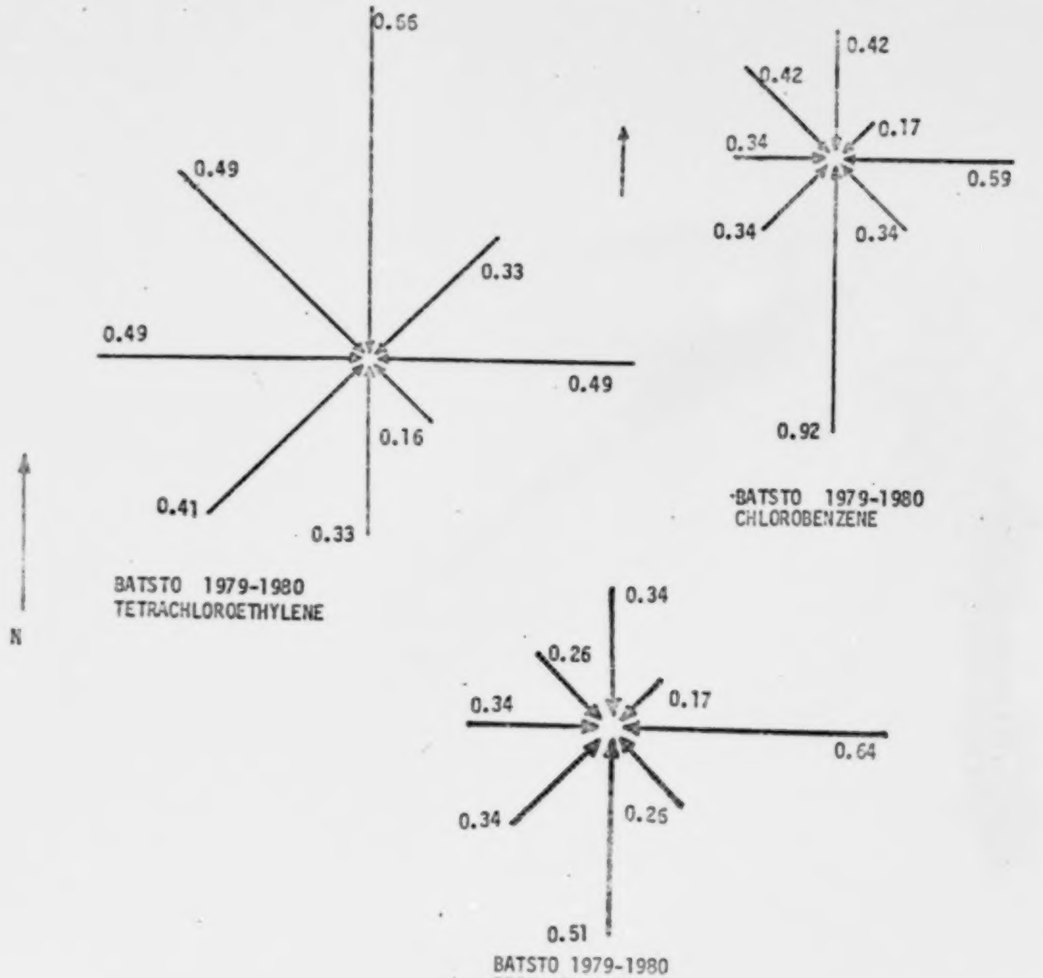
BATSTO 1979-1980
ORTHO-XYLENE

BATSTO 1979-1980 TOLUENE

BATSTO 1979-1980 PARA/META-XYLENES

Figure 35

Average Concentration of Chlorinated Hydrocarbons vs. Wind Direction at Batsto(8 Vectors)



BATSTO 1979-1980
TETRACHLOROETHYLENE

BATSTO 1979-1980
CHLOROBENZENE

BATSTO 1979-1980
TRICHLOROETHYLENE

Figure 36

Average Concentration of Aromatic Hydrocarbons
vs. Wind Direction at Newark(8 Vectors)

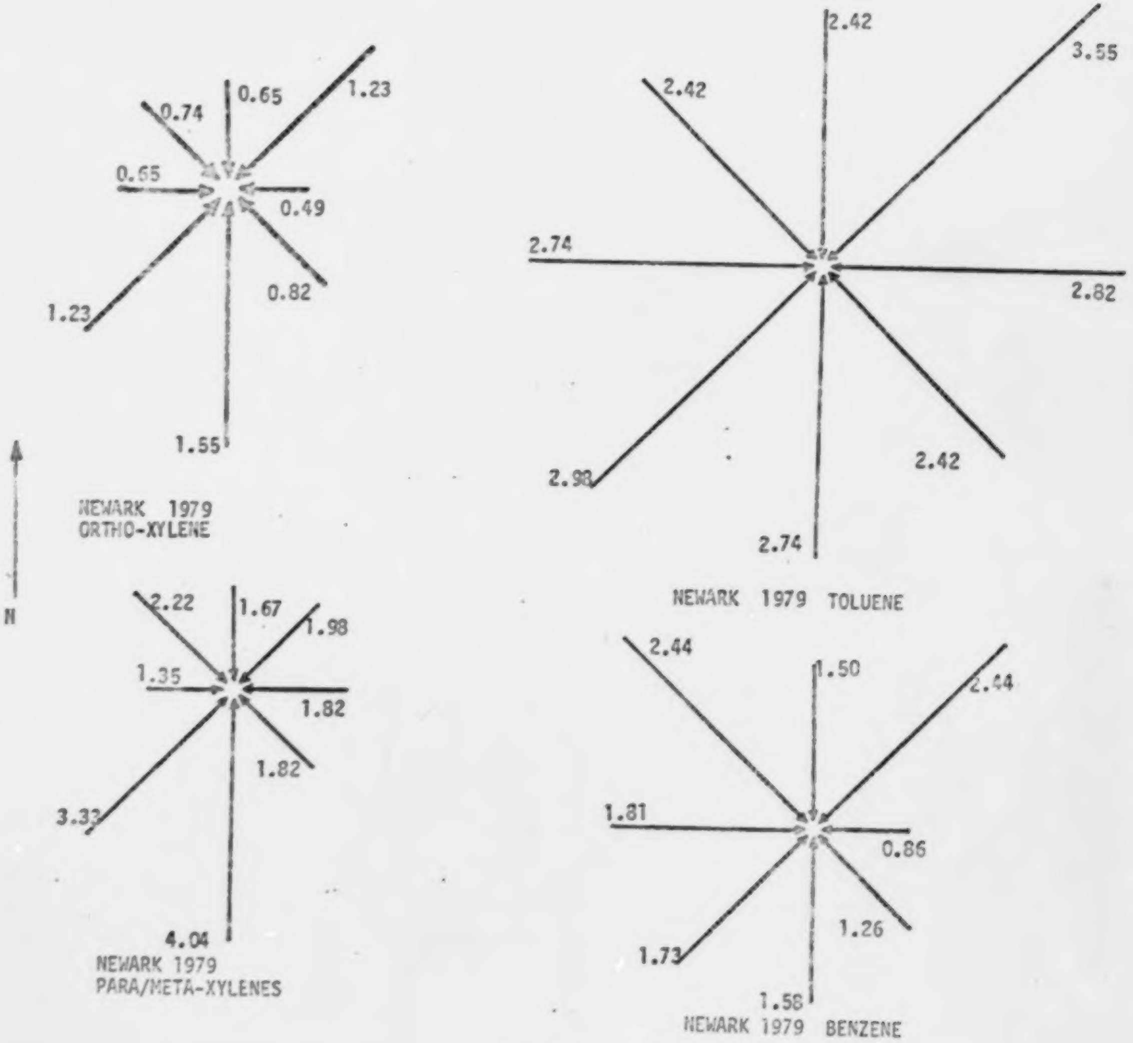


Figure 37

Average Concentration of Chlorinated Hydrocarbons vs. Wind Direction at Newark (8 Vectors)

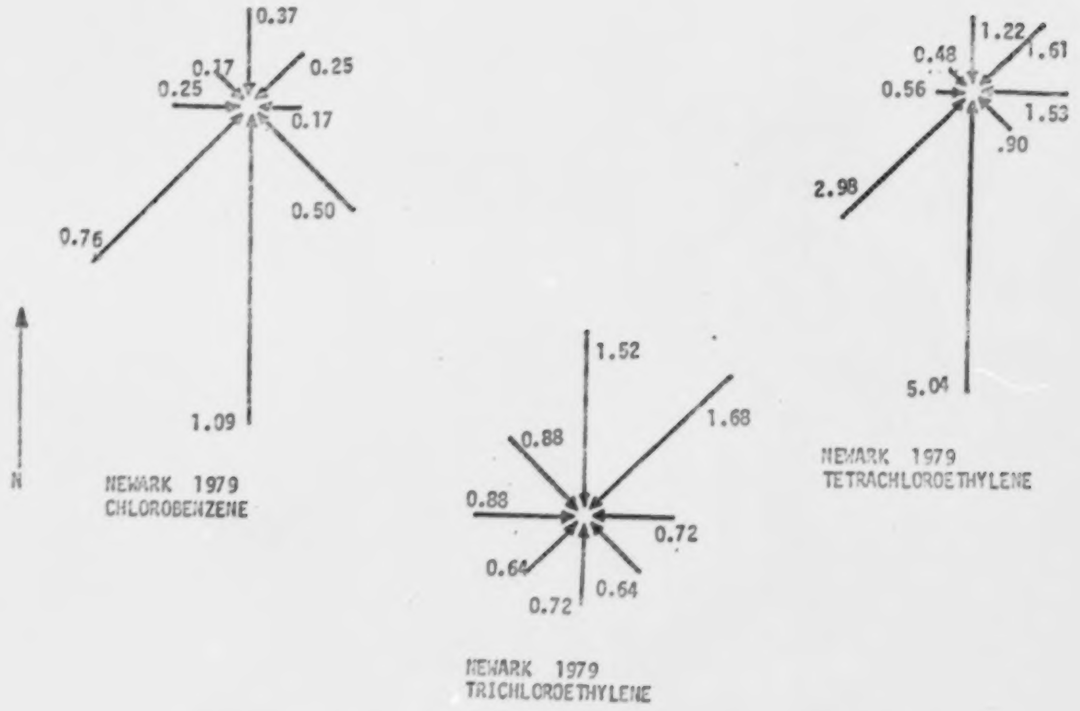
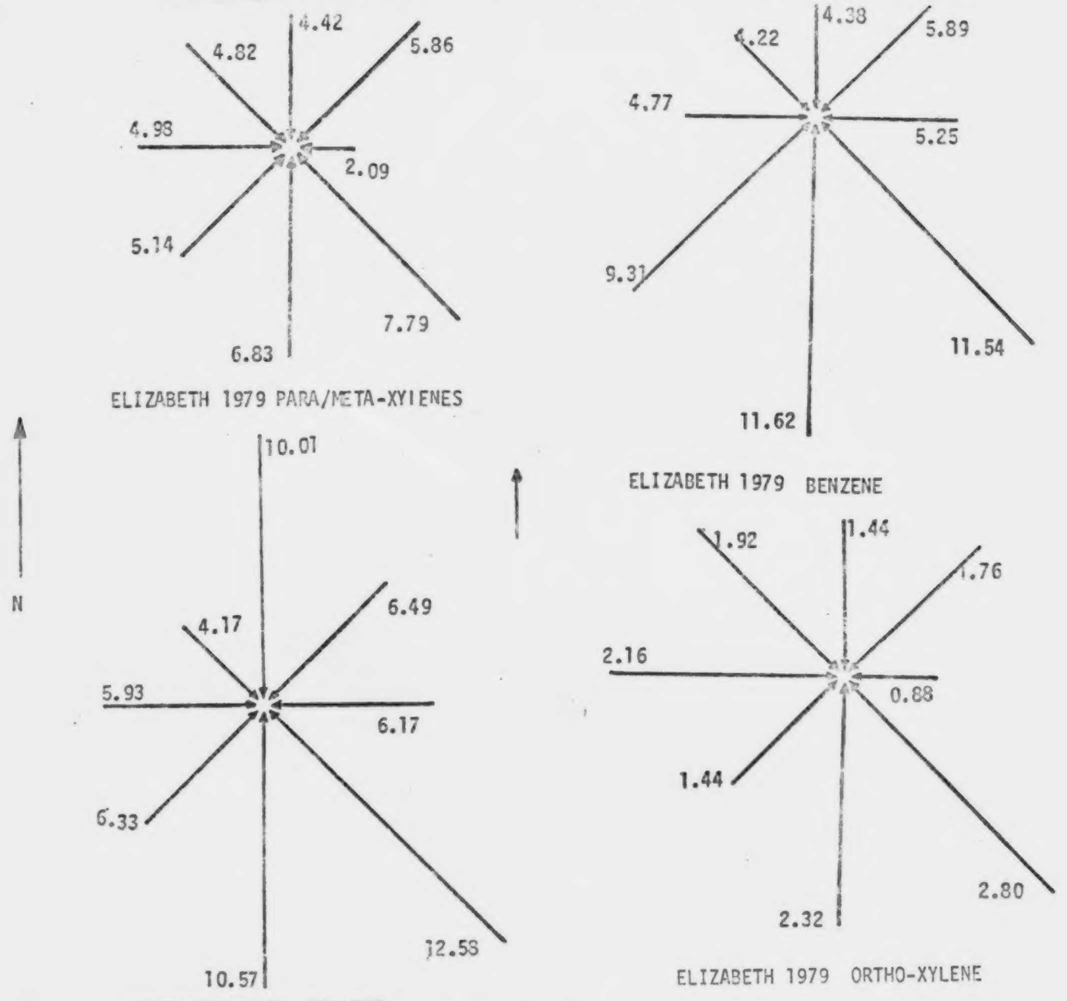


Figure 38

Average Concentration of Aromatic Hydrocarbons vs. Wind Direction at Elizabeth(8 Vectors)



ELIZABETH 1979 PARA/META-XYIENES

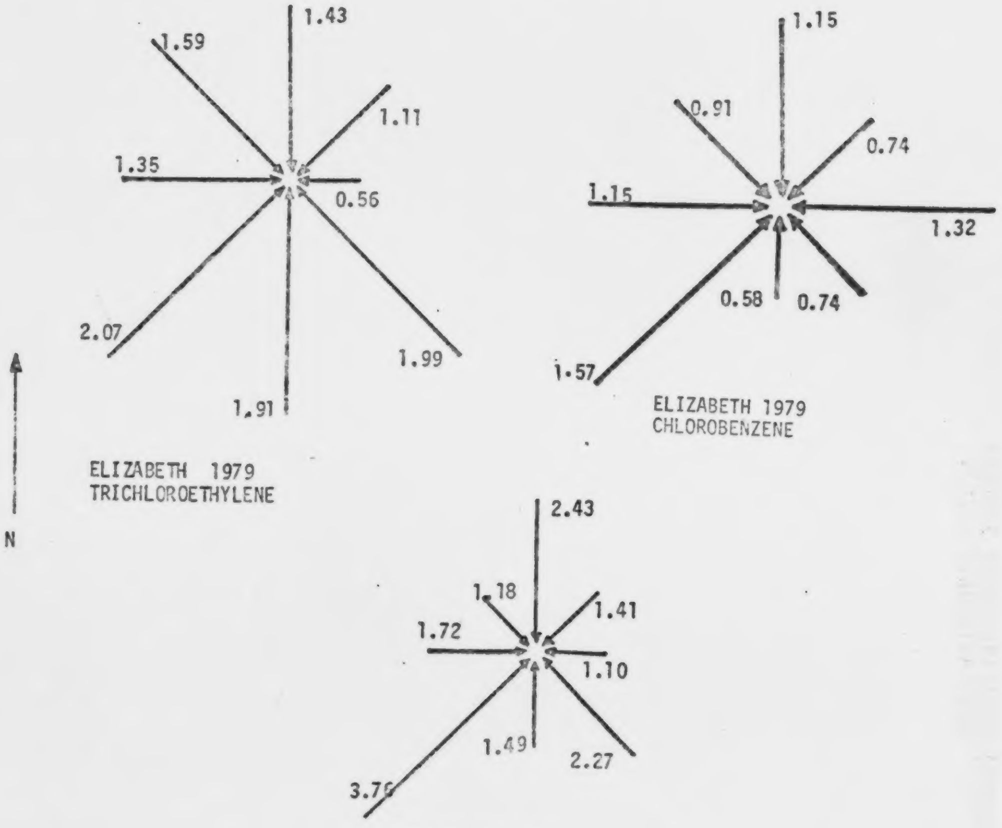
ELIZABETH 1979 BENZENE

ELIZABETH 1979 TOLUENE

ELIZABETH 1979 ORTHO-XYLENE

Figure 39

Average Concentration of Chlorinated Hydrocarbons vs. Wind Direction at Elizabeth(8 Vectors)



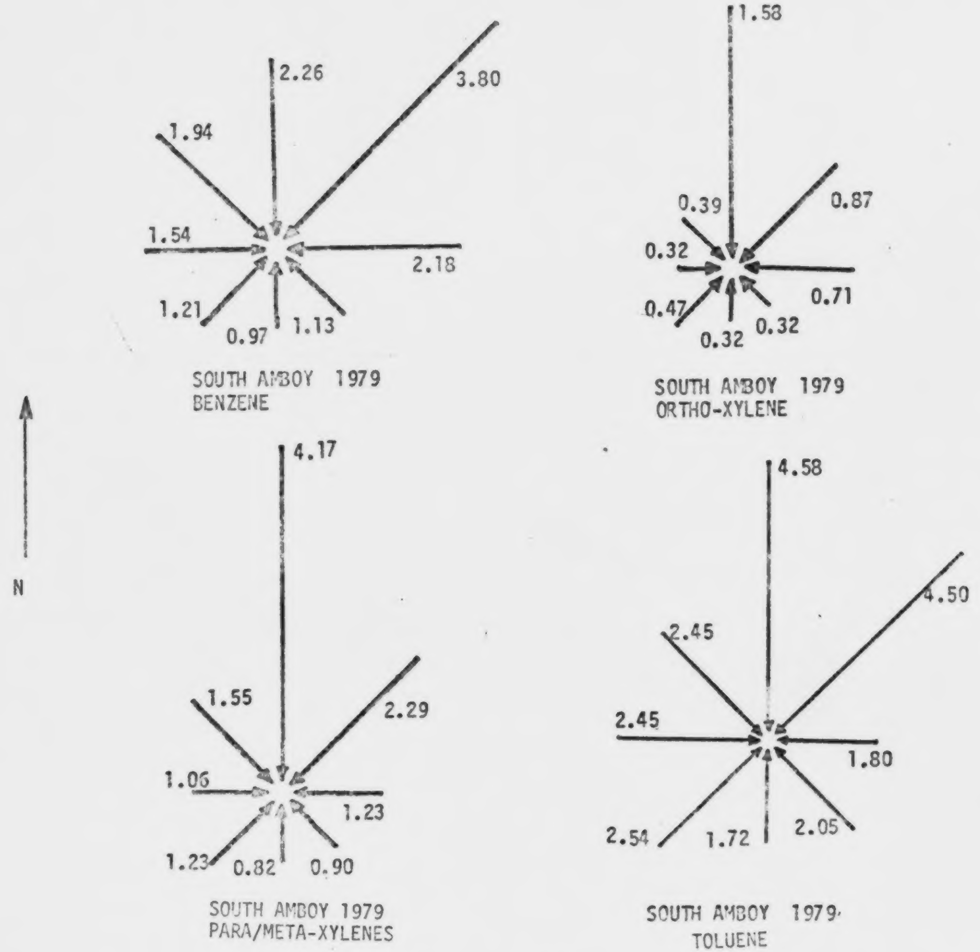
ELIZABETH 1979
TRICHLOROETHYLENE

ELIZABETH 1979
CHLOROBENZENE

ELIZABETH 1979
TETRACHLOROETHYLENE

Figure 40

Average Concentration of Aromatic Hydrocarbons vs. Wind Direction at South Amboy(8 Vectors)



SOUTH AMBOY 1979
BENZENE

SOUTH AMBOY 1979
ORTHO-XYLENE

SOUTH AMBOY 1979
PARA/META-XYLENES

SOUTH AMBOY 1979
TOLUENE

Figure 41

Average Concentration of Chlorinated Hydrocarbons vs. Wind Direction at South Amboy(8 Vectors)

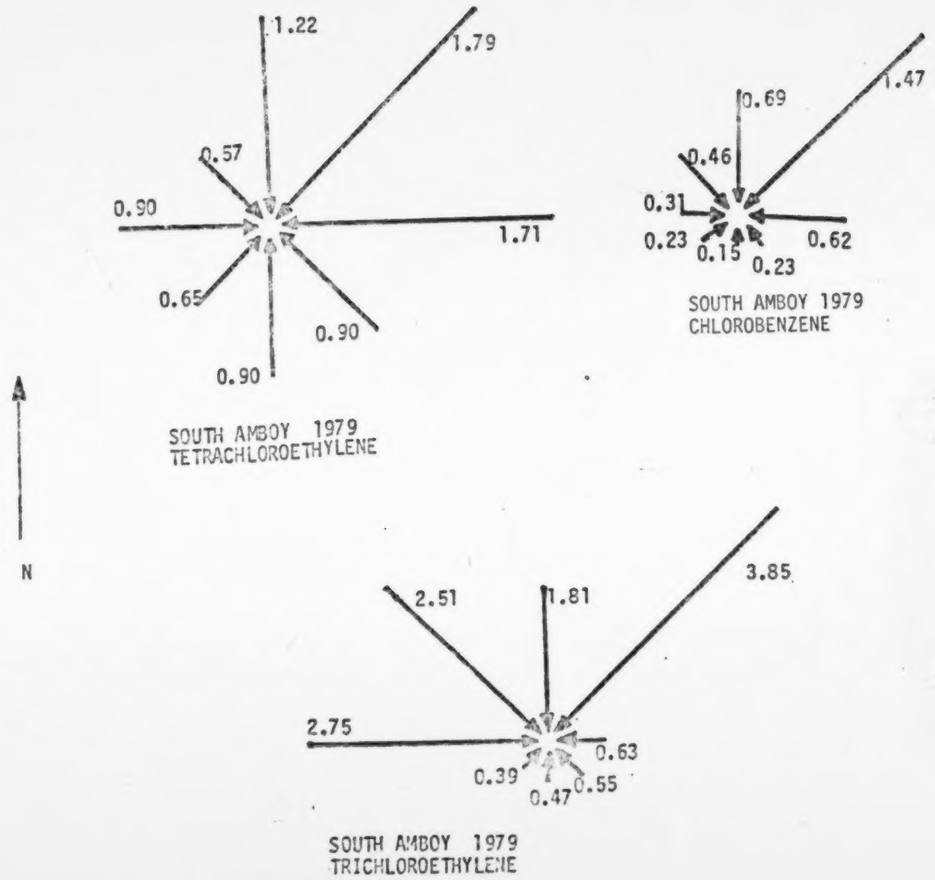
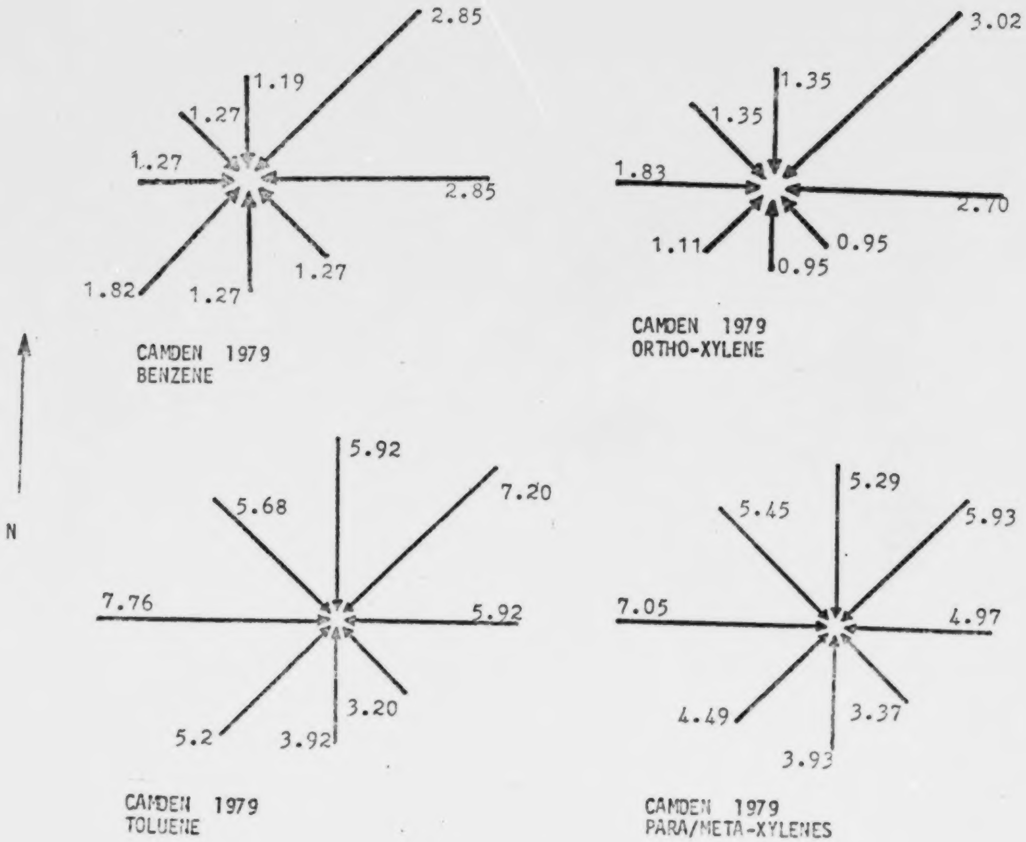


Figure 42

Average Concentration of Aromatic Hydrocarbons vs. Wind Direction at Camden(8 Vectors)



CAMDEN 1979
BENZENE

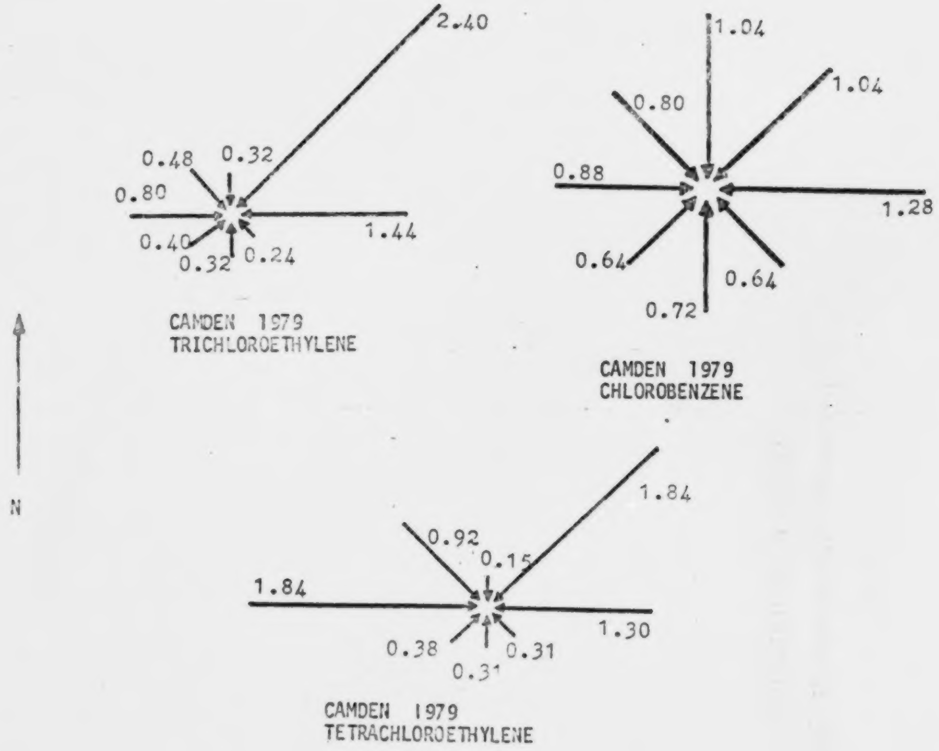
CAMDEN 1979
ORTHO-XYLENE

CAMDEN 1979
TOLUENE

CAMDEN 1979
PARA/META-XYLENES

Figure 43

Average Concentration of Chlorinated Hydrocarbons
vs. Wind Direction at Camden(8 Vectors)



CAMDEN 1979
TRICHLOROETHYLENE

CAMDEN 1979
CHLOROBENZENE

CAMDEN 1979
TETRACHLOROETHYLENE

Figure 44

south or southwest 75 % of the time in the above illustration. Averaging similar to this over a large number of days, 60 or 120 in this study will, in general, tend to eliminate or cancel the singular errors from a given day.

The assignment of concentration to wind direction for each pollutant is done by multiplying the Wind Vector Number WN(l) by the average concentration, X:

WN(l) x X = CF(I) concentration factor for each wind direction (I), pollutant, site and day.

Again, I equals 1 to 8 corresponding to the wind directions.

These concentration factors CF(I) were then summed for each wind rection over all sampling days for a specific pollutant and site for each wind direction (I), giving:

SUM CF(I) where I equals 1 through 8, for each pollutant and site.

The sum of concentrations factors for each wind direction was then divided by the sum of the Wind Vector numbers SUM WN(I) for all days at a given site to yield an average pollutant concentration from each wind direction. This sum of wind vector numbers is simply the total number of 3 hour periods that the wind originated form the direction, I , on all sampling days for the sites using the Newark or Philadelphia data.

The data from this analysis is presented in Figures 33 through 44 for the sites Rutherford, Newark, Elizabeth, South Amboy, Camden and Batsto (Pineland), for seven pollutants that were measured routinely at the sites. The specific species are: trichloroethylene, tetrachloroethylene, benzene, toluene, chlorobenzene, para and meta-xylenes and ortho-xylene. The numbers assigned to the vectors in the figures are the average concentration from that wind direction.

The average concentration for the sampling day is assigned initially to all of the 3 hour wind dirctions. The way an error can be introduced using this assumption may be best illustrated by the following example. A set of 3 hour wind direction vectors showing 1 from the north and 7 for the combined south and southwest is observed. There is a possibility that all of specific pollutant found on that day was due to the north direction. This would unfairly weight the directions from the south and southwest too heavily and from the north too lightly. On the other hand it is felt that the averaging over a significant number of days samples at each location would tend to cancel out this type of error to a large extent. Exceptionally high pollutant concentrations, above ten times the average, were eliminated from this wind analysis to reduce improper weighting of the data.

Looking at the data, one notices that the South Amboy site exhibits larger vectors from the northerly directions than from any other. A check on the validity of this weighting comes from comparison of the wind vectors for the four quadrants using data only when the wind remained within the 90 degree sector throughout the sampling period. One can see that the four sector limited analysis South Amboy data are markedly similar to that of the 8 sector analysis using all the data. Similar, but not identical comparison, patterns are also shown at the other sites.

The actual performance of these initial statistical wind versus pollutant concentration analysis has suggested several improvements. The present analysis, however, provides the FIRST data of any kind for these organic vapors, in ambient air.

Meteorological analysis was initiated on a more detailed basis (hourly wind data) for the samples collected and analyzed from the Mariners Harbor and Travis Sites on Staten Island, NY. This analysis was performed by Dr. Nathan Reiss of the Department of Meteorology and Physical Oceanography, Rutgers University, New Brunswick, NJ. as consultant to NJIT. The study involved statistical analysis of hourly surface wind data from the nearby U.S. National Weather Service Station at Newark Airport. The analysis was performed for ten compounds at the Mariners Harbor site and 11 compounds on the target list at the Travis site, for all samples collected up to mid-April 1982. Correlations were computed between the 24-hour concentration of each compound and the number of hours that the wind blew from each ten degree sector during that 24-hour period. Because of the non-normality of the distributions of both the concentration and wind data, the Spearman Rank Correlation, a non-parametric statistic, was employed. The resulting correlations are presented in the form of polar coordinate plots in Figures 45 through 65. A correlation of about 0.7 is required for statistical significance at the five percent confidence level. This technique has the advantage of making optimum use of the detailed wind observations that are available, despite the fact that the pollutant observations themselves have only a 24-hour time resolution.

Although these results are only for a short sampling duration, some features may be noted. Benzene, styrene, xylene and ethylbenzene at Travis are positively correlated with winds from the southwest. Toluene, styrene and p-xylene are positively correlated with winds from the north. Tetrachloroethylene exhibited higher levels when winds were out of the westerly directions and trichloroethylene showed higher levels with winds from northwest, again for the Travis site.

Mariners Harbor data show that ethylbenzene and styrene appear to have higher levels with winds from the southwest with all the aromatic target species (non-chlorinated) also exhibiting higher levels when winds were from the northeast. The halocarbons trichloroethylene and tetrachloroethylene also appear to show higher levels in the air when winds are from either the southwesterly or northeasterly directions.

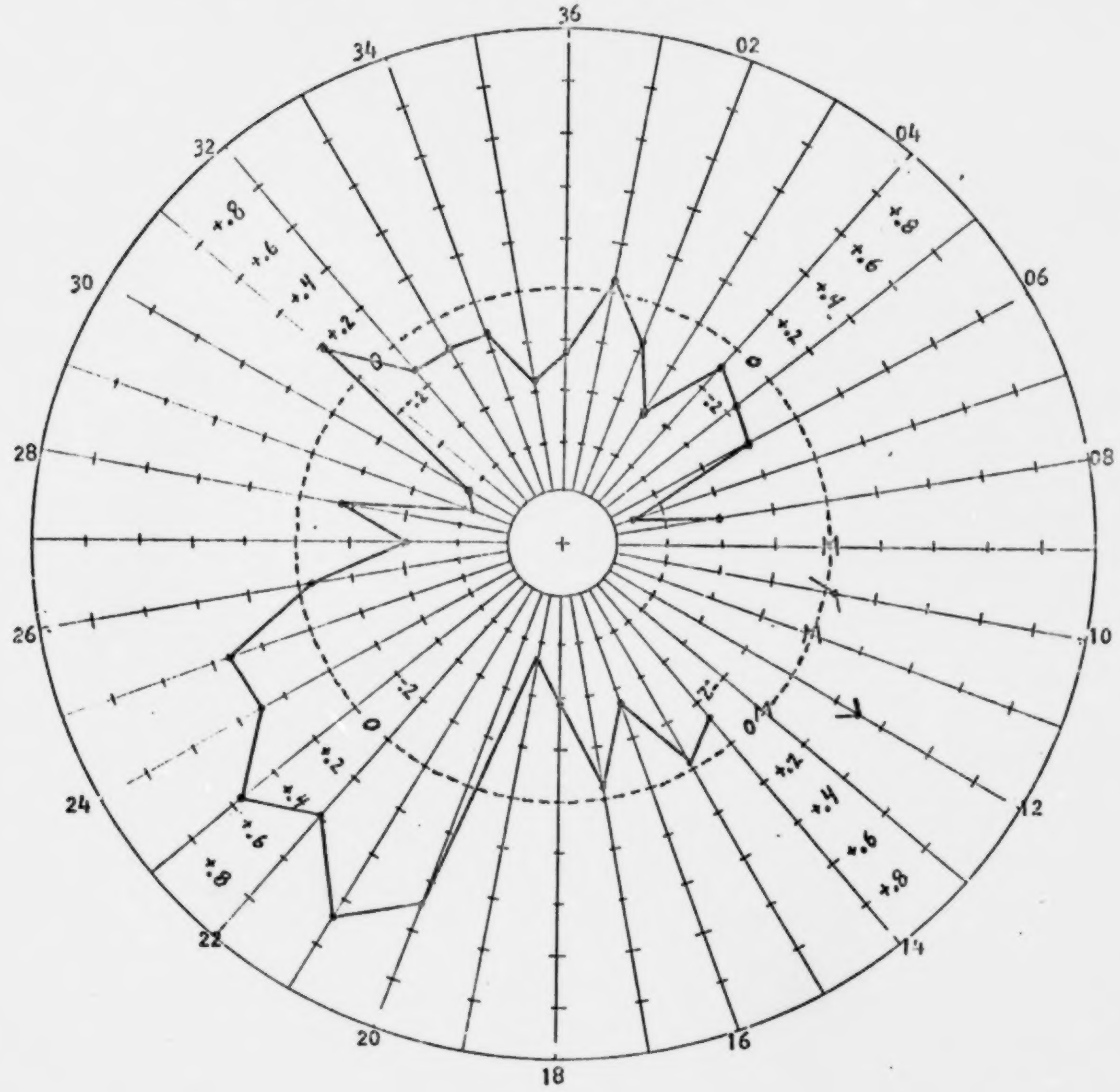
This meteorological analysis is certainly preliminary in nature, but indicates that capabilities exist for other research in determination of spatial and temporal patterns in the data.

COMPARISON WITH OTHER STUDIES

A relatively small number of studies on the levels of known or suspected volatile organic compounds in the ambient atmosphere have been published.

The reported levels of carbon tetrachloride in areas where no local contribution is expected are, for example, consistently

Correlation of Benzene Concentration with Wind Direction at Travis (36 Vectors)



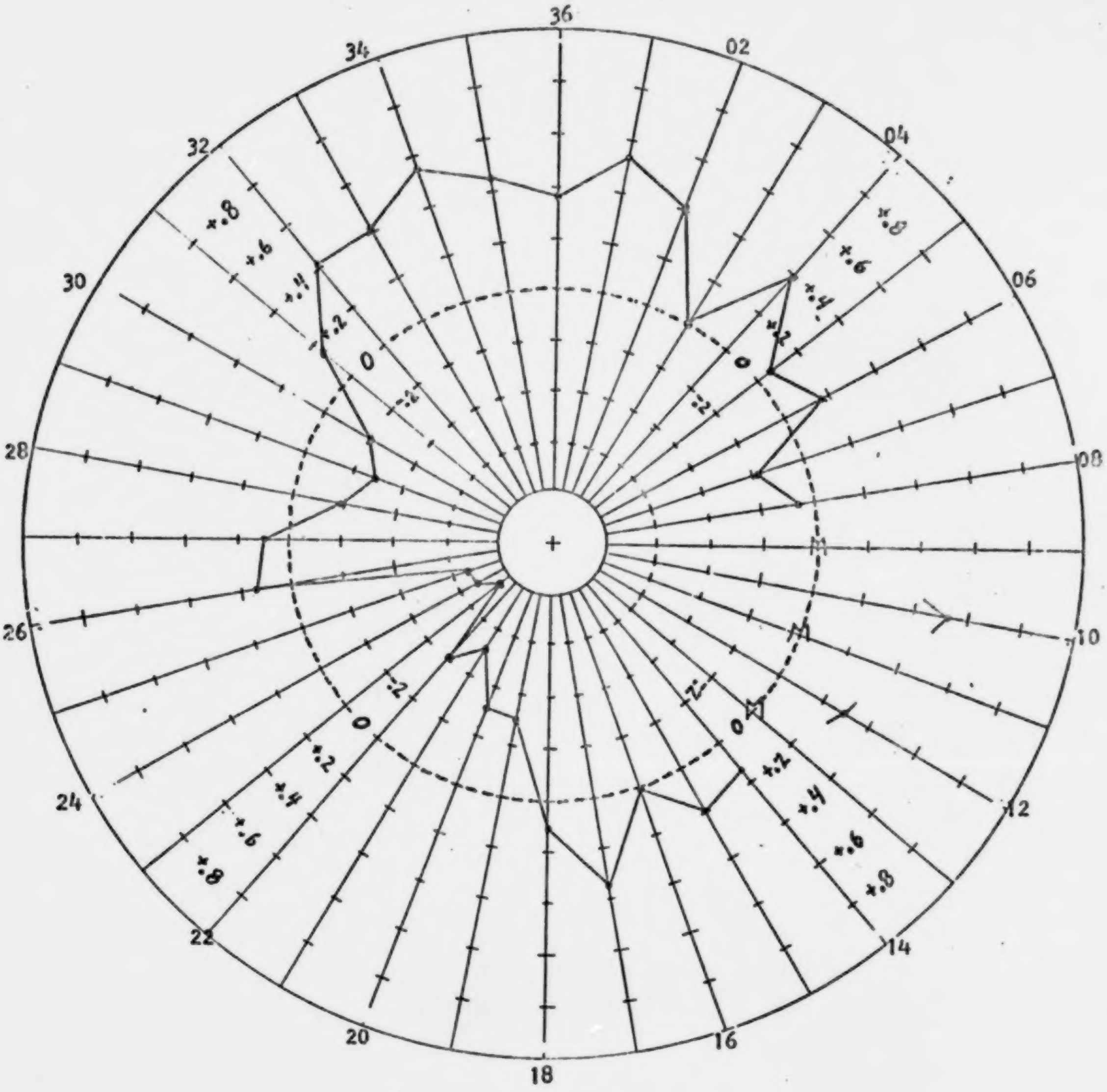
SITE: Travis

POLLUTANT: Benzene

MONITORING DATES: 1/4/81 - 4/16/81

Figure 45

Correlation of Toluene Concentration with Wind Direction at Travis (36 Vectors)



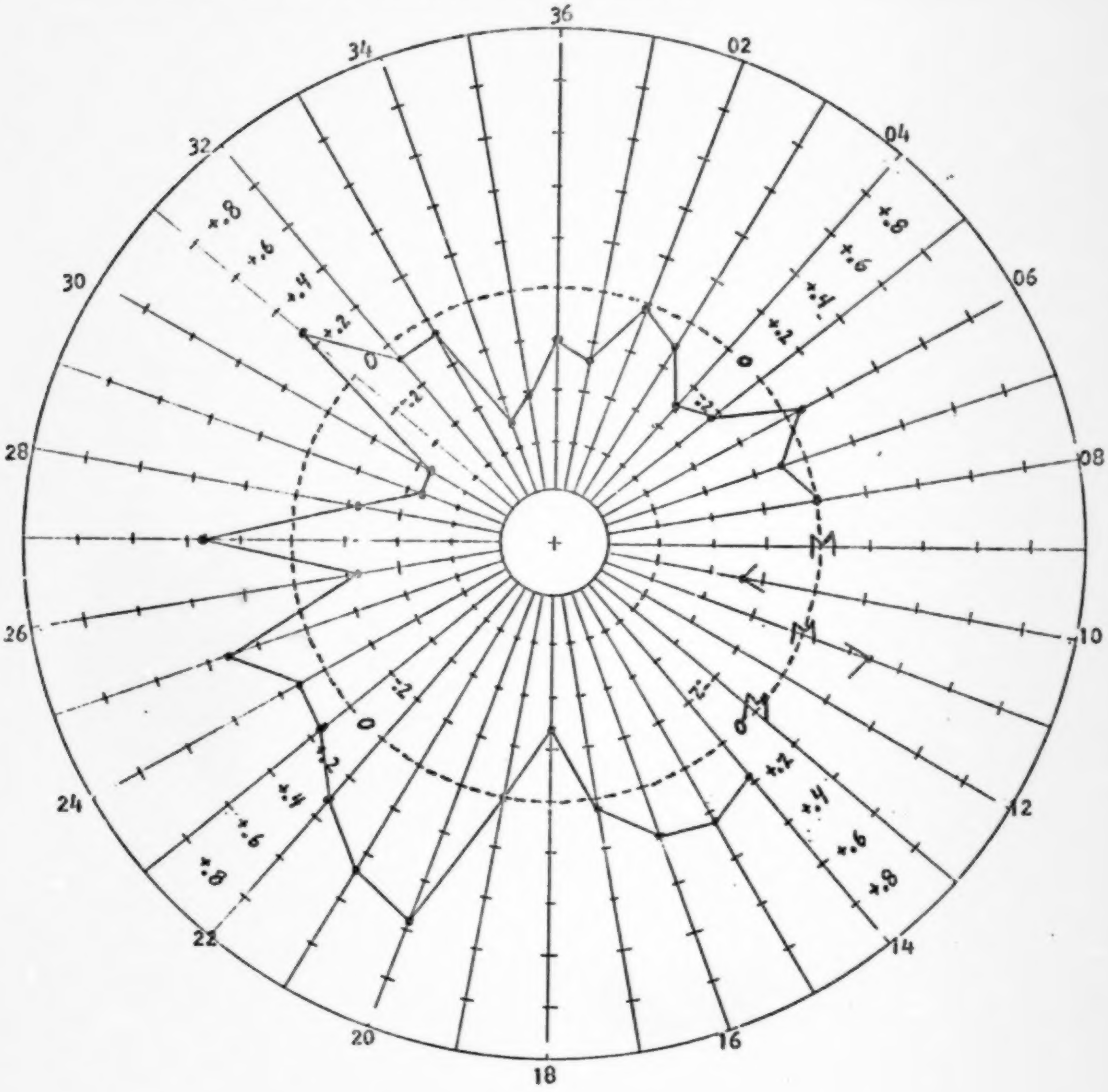
SITE: Travis

POLLUTANT: Toluene

MONITORING DATES: 1/4/81-- 4/16/81

Figure 46

Correlation of Ethylbenzene Concentration with Wind Direction at Travis (36 Vectors)



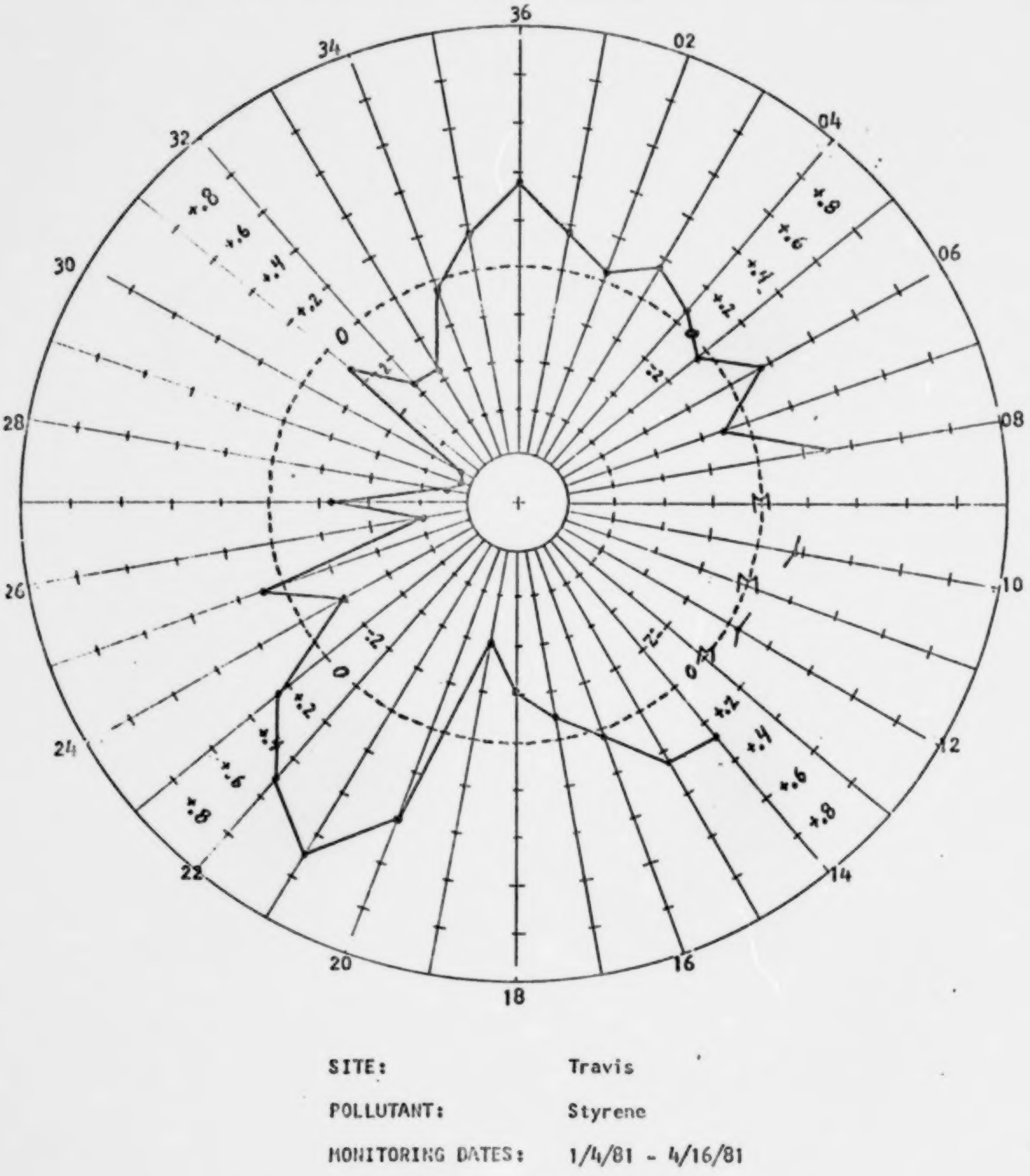
SITE: Travis

POLLUTANT: Ethylbenzene

MONITORING DATES: 1/4/81 - 4/16/81

Figure 47

Correlation of Styrene Concentration with Wind Direction at Travis (36 Vectors)



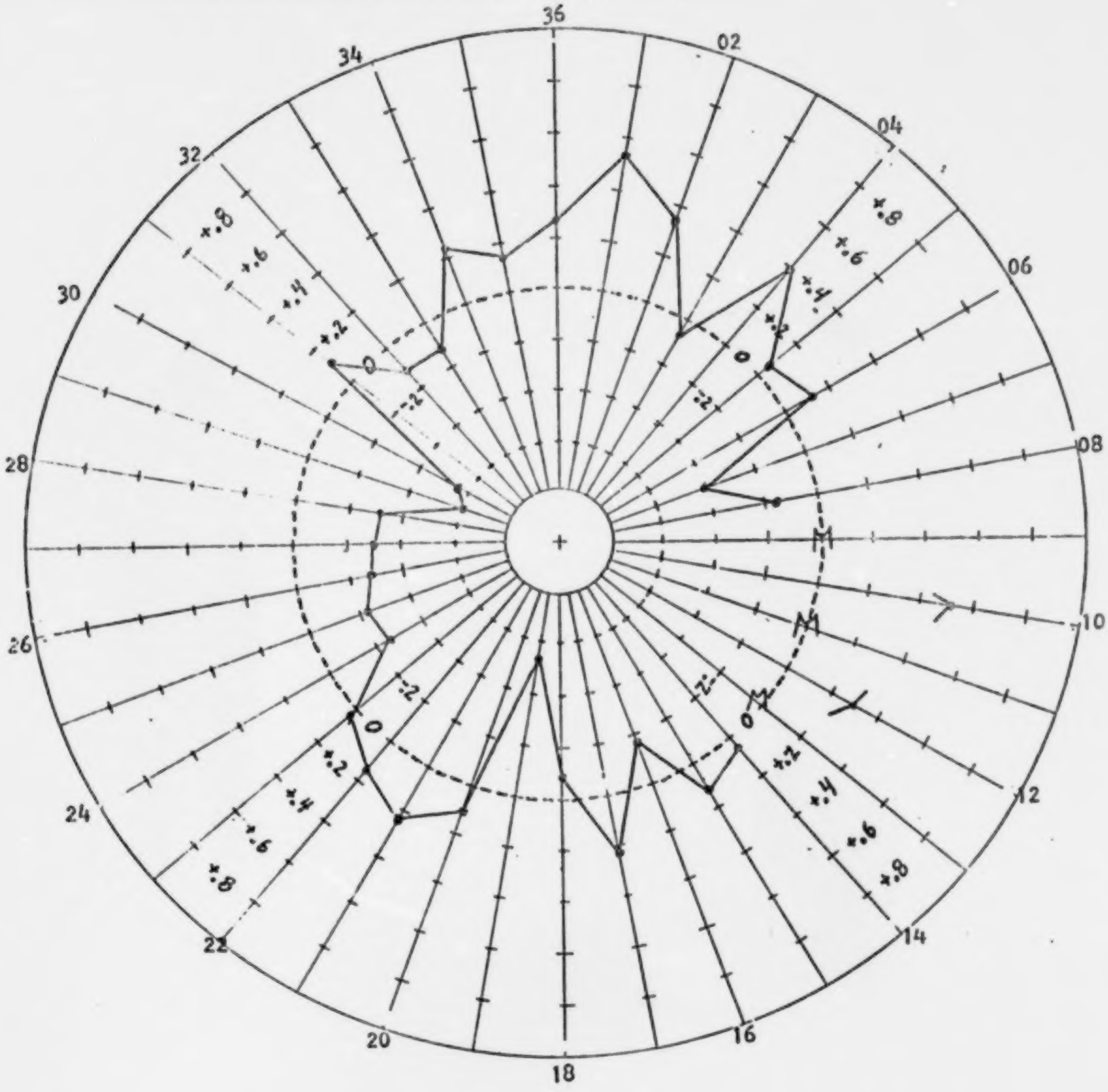
SITE: Travis

POLLUTANT: Styrene

MONITORING DATES: 1/4/81 - 4/16/81

Figure 48

Correlation of p-Xylene Concentration with Wind Direction at Travis (36 Vectors)



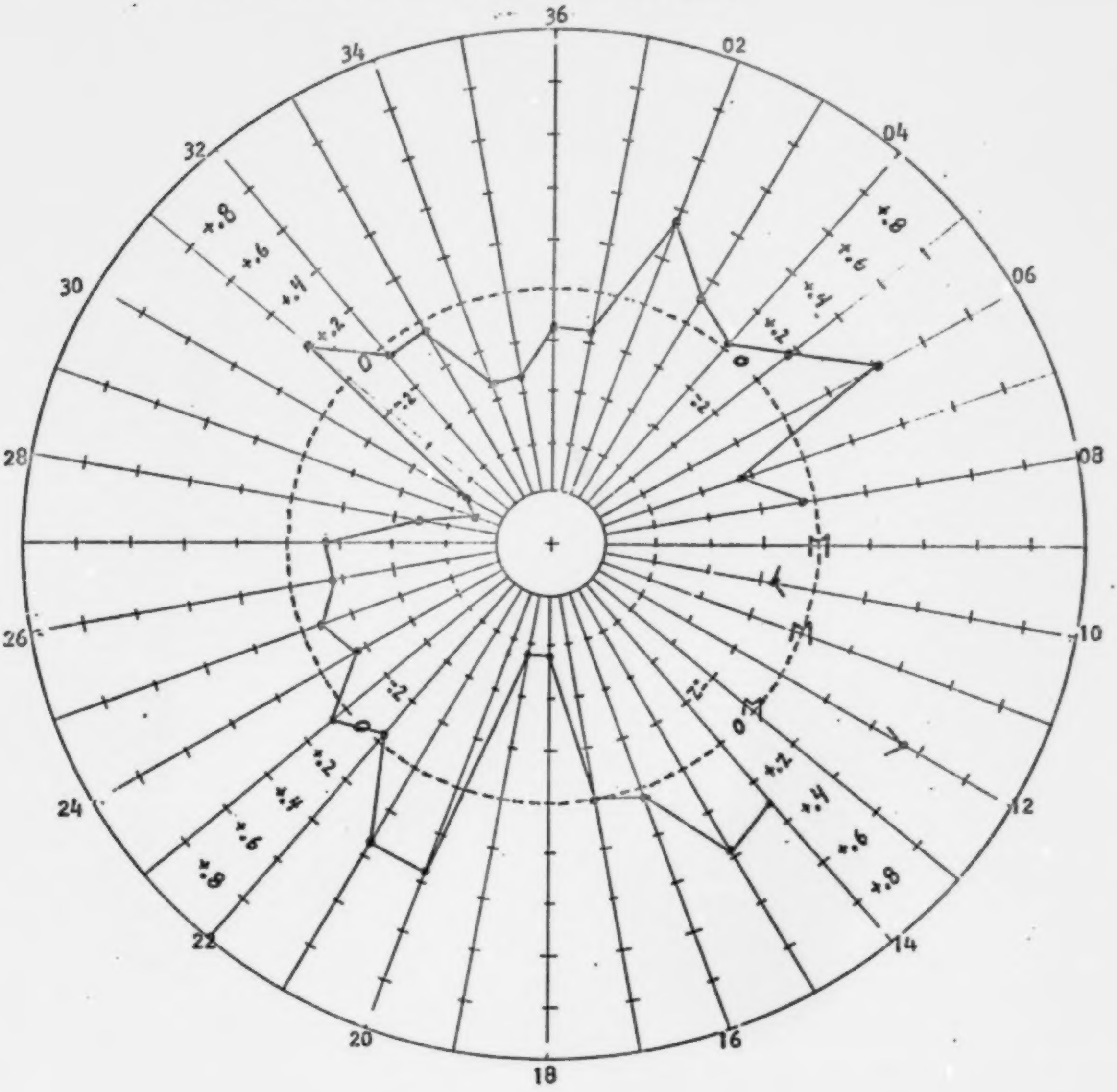
SITE: Travis

POLLUTANT: Para-xylene

MONITORING DATES: 1/4/81 - 4/16/81

Figure 49

Correlation of o-Xylene Concentration with Wind Direction at Travis (36 Vectors)



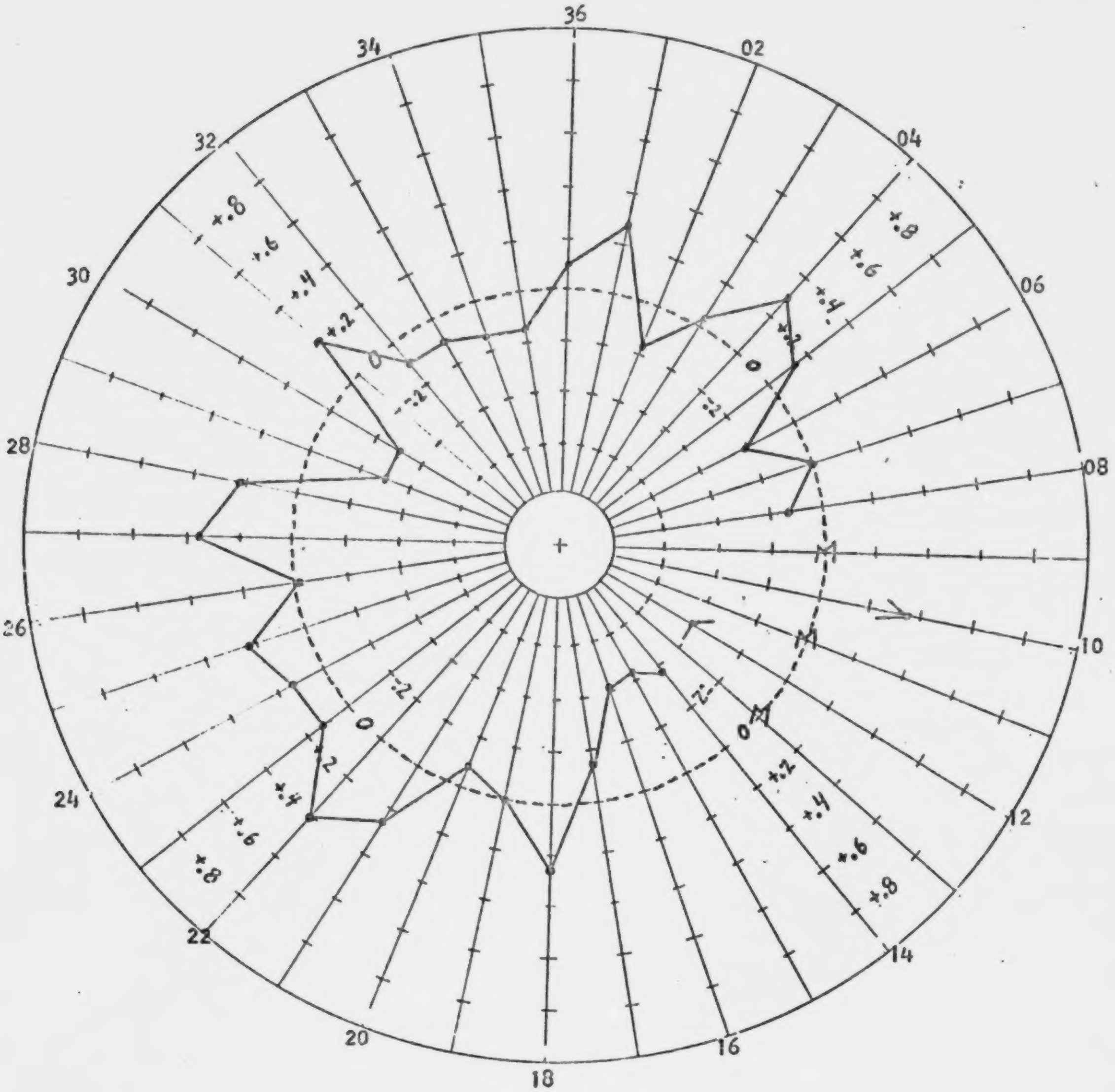
SITE: Travis

POLLUTANT: Ortho-xylene

MONITORING DATES: 1/4/81 - 4/16/81

Figure 50

Correlation of Chloroform Concentration with Wind Direction at Travis (36 Vectors)



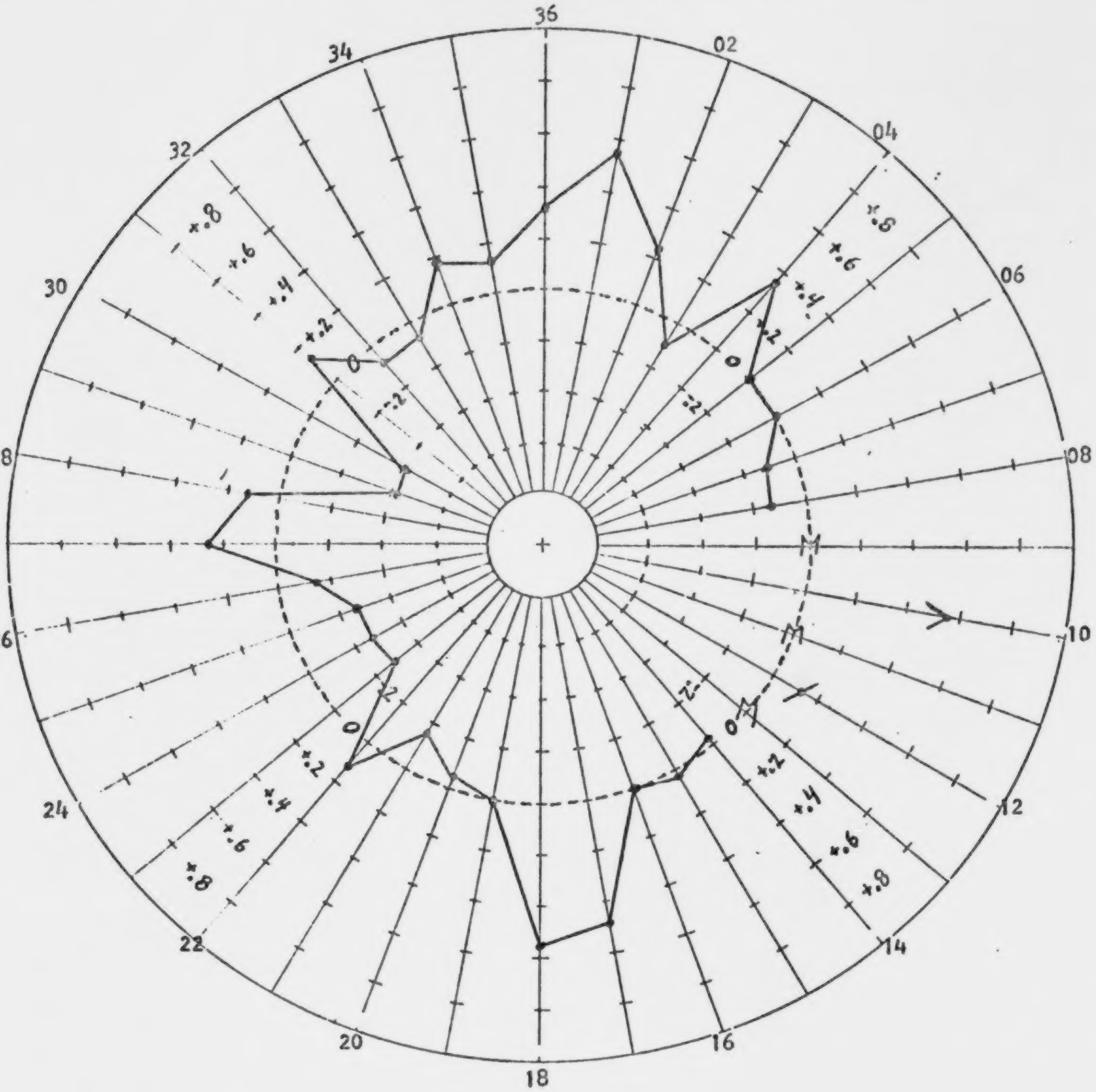
SITE: Travis

POLLUTANT: Chloroform

MONITORING DATES: 1/4/81 - 4/16/81

Figure 51

Correlation of Carbon Tetrachloride Concentration with Wind Direction at Travis (36 Vectors)



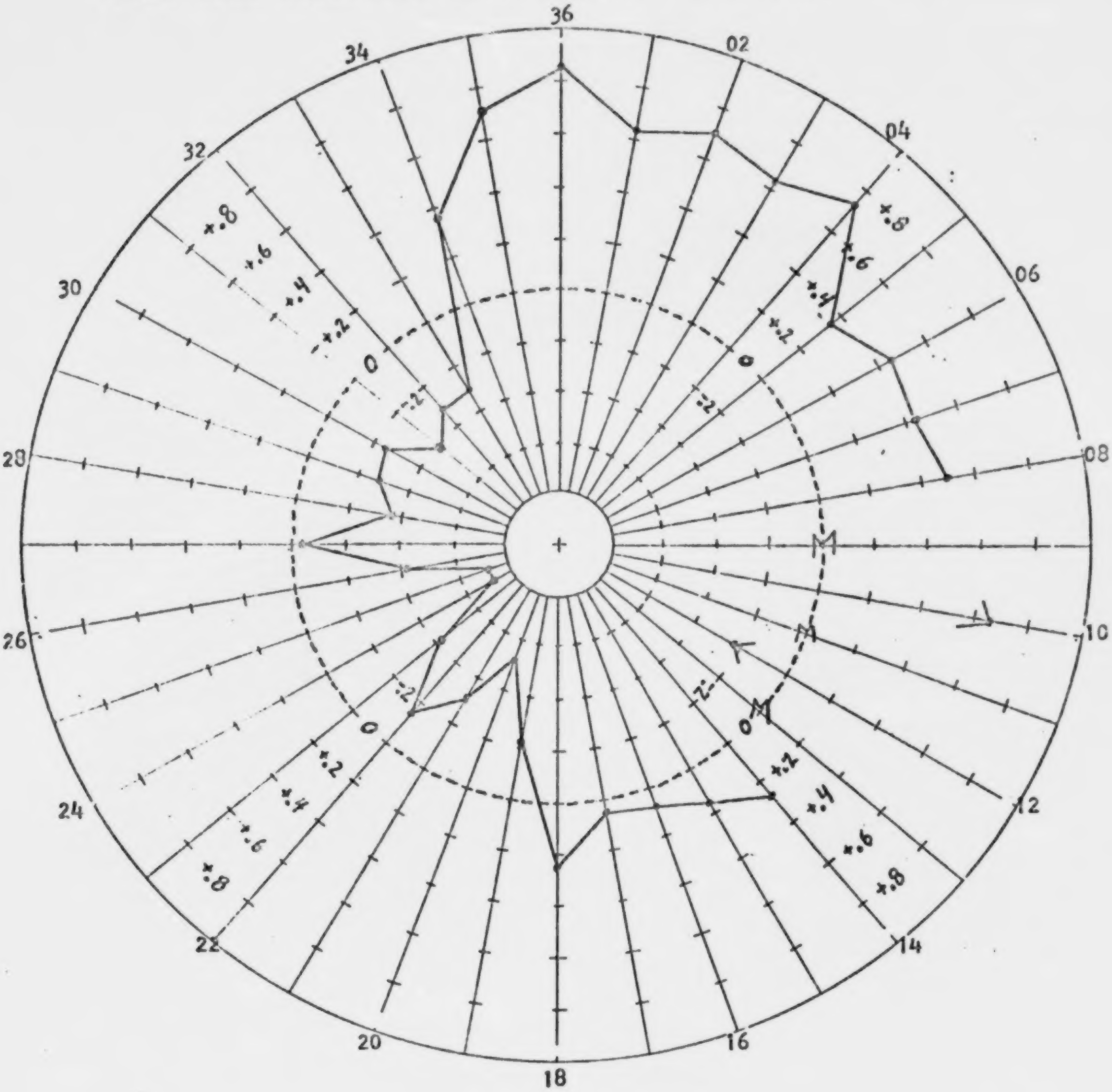
SITE: Travis

POLLUTANT: Carbon Tetrachloride

MONITORING DATES: 1/4/81 - 4/16/81

Figure 52

Correlation of Trichloroethylene Concentration
with Wind Direction at Travis (36 Vectors)



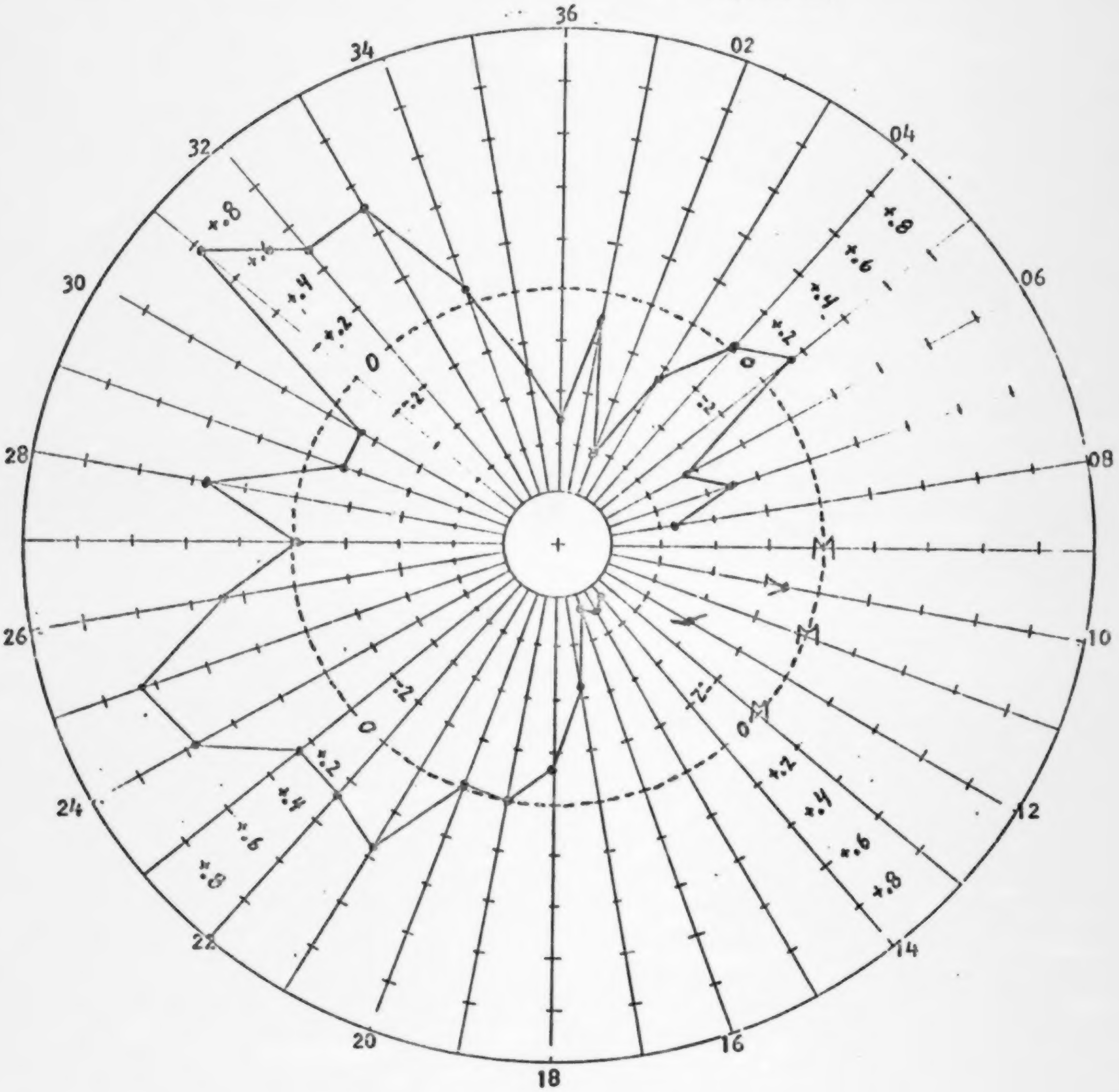
SITE: Travis

POLLUTANT: Trichloroethylene

MONITORING DATES: 1/4/81 - 4/16/81

Figure 53

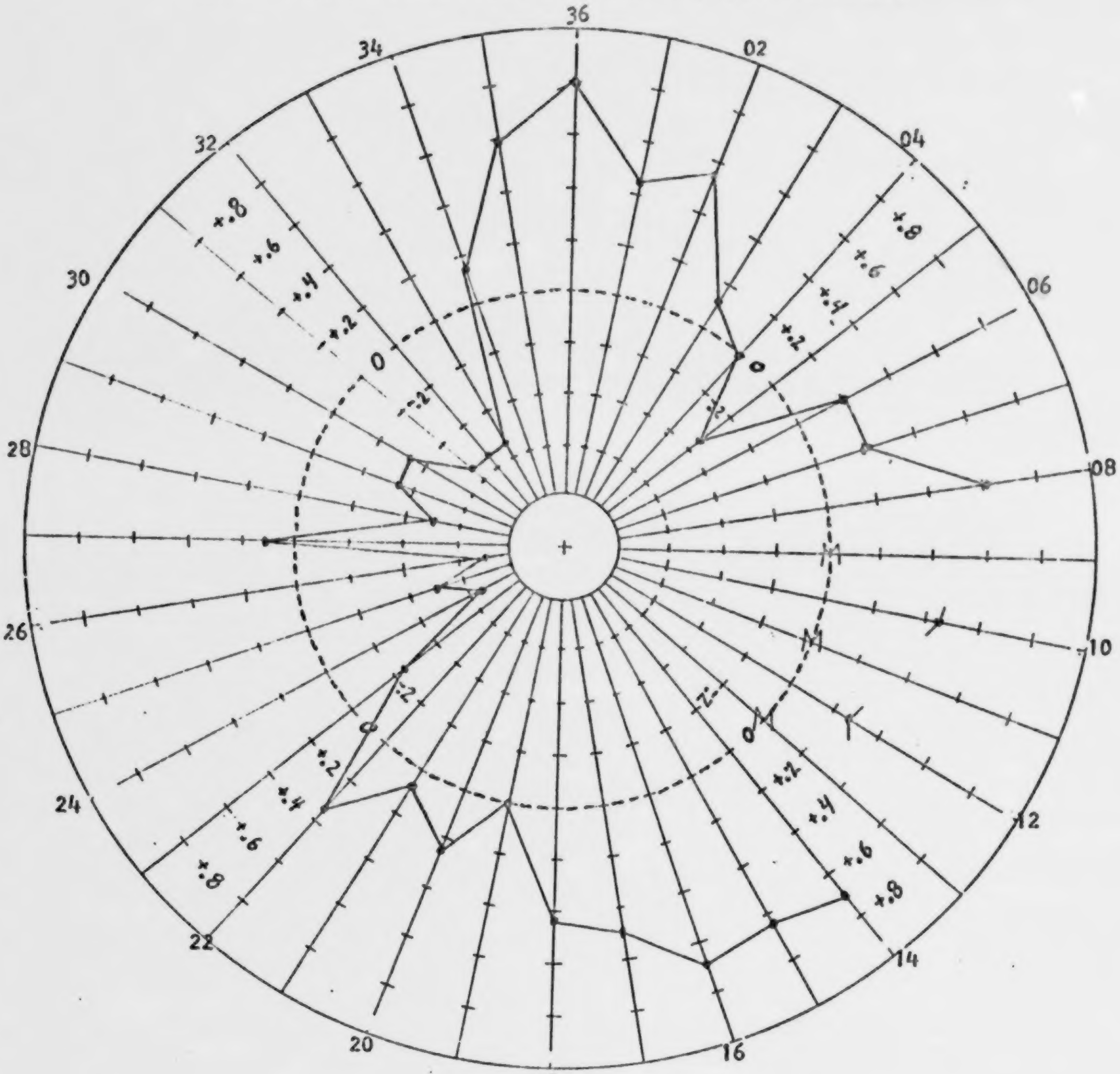
Correlation of Tetrachloroethylene Concentration with Wind Direction at Travis (36 Vectors)



SITE:	Travis
POLLUTANT:	Tetrachloroethylene
MONITORING DATES:	1/4/81 - 4/16/81

Figure 54

Correlation of Chlorobenzene Concentration
with Wind Direction at Travis (36 Vectors)



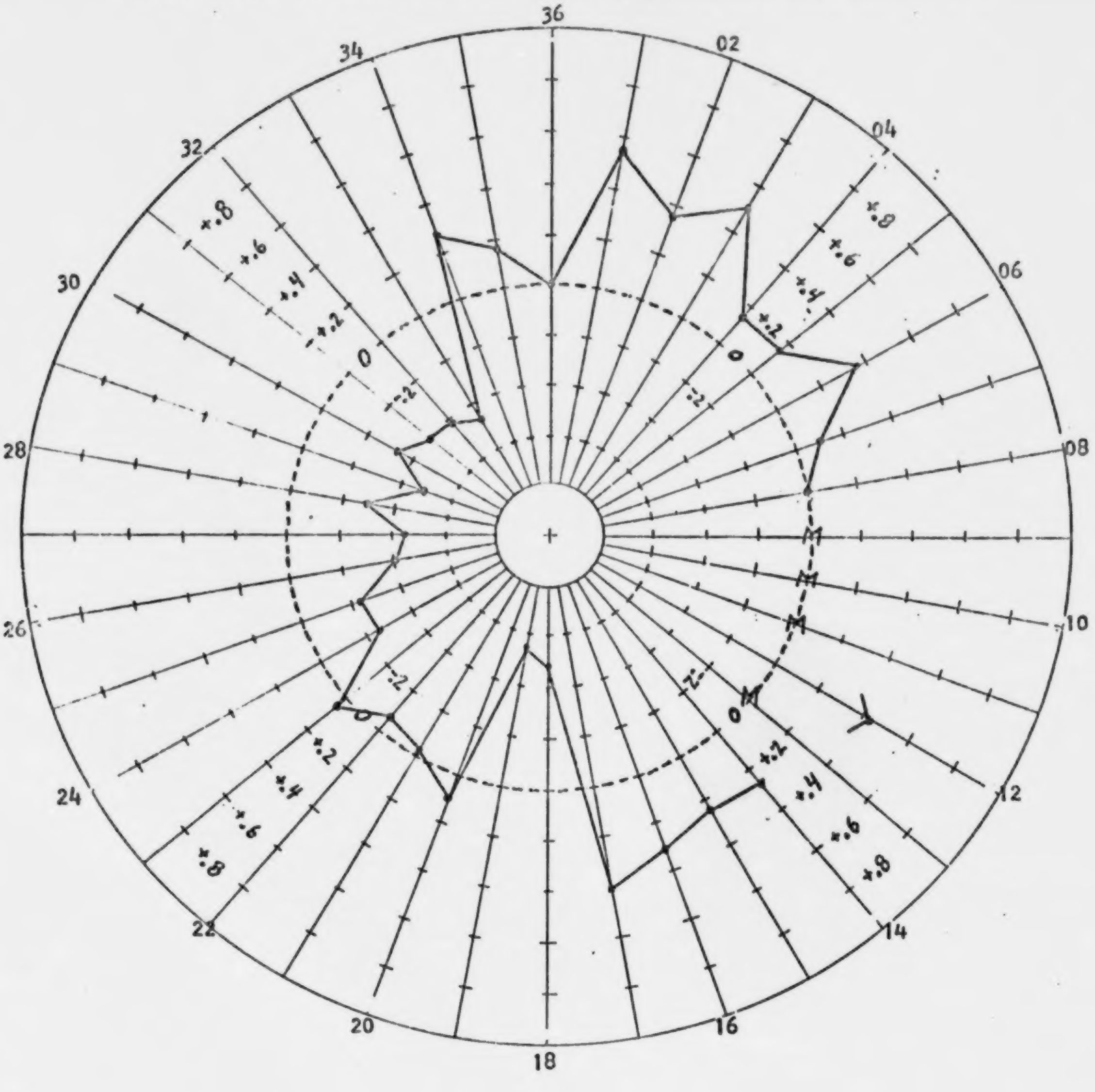
SITE: Travis

POLLUTANT: Chlorobenzene

MONITORING DATES: 1/4/81 - 4/16/81

Figure 55

Correlation of Benzene Concentration
with Wind Direction at Mariner's Harbor(36 Vectors)



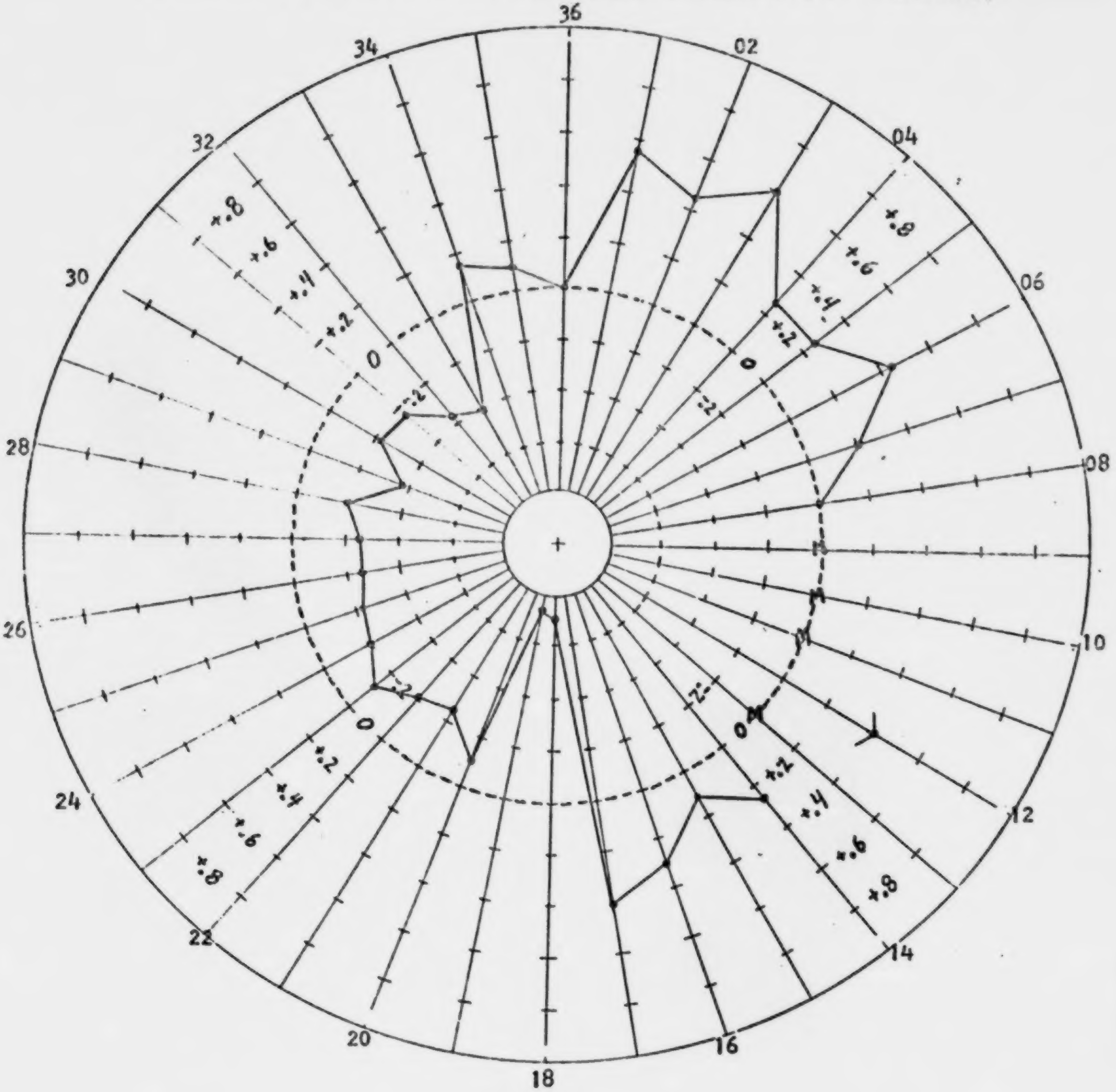
SITE: Mariner's Harbor

POLLUTANT: Benzene

MONITORING DATES: 12/23/80 - 4/4/81

Figure 56

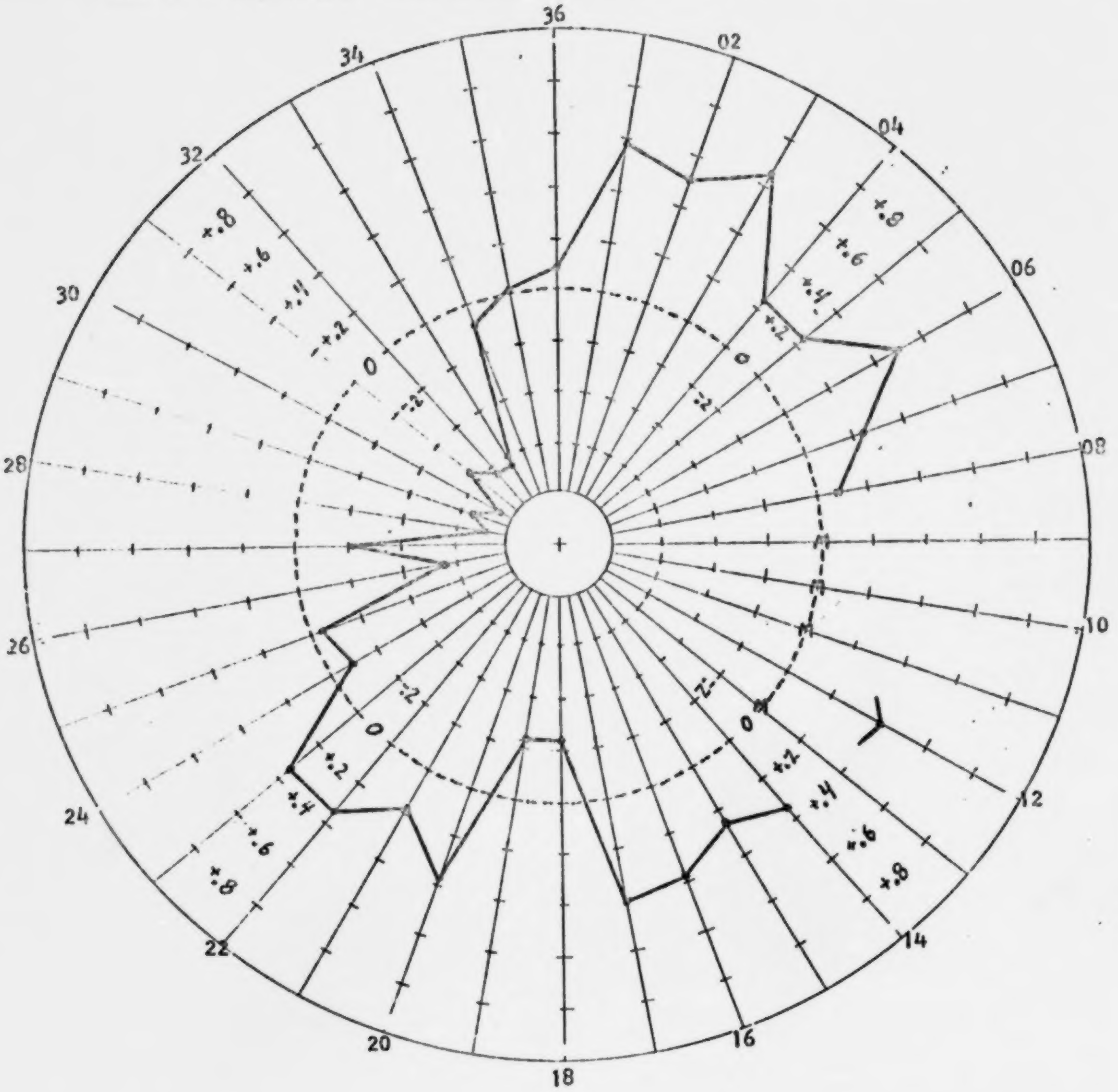
Correlation of Toluene Concentration
with Wind Direction at Mariner's Harbor(36 Vectors)



SITE:	Mariner's Harbor
POLLUTANT:	Toluene
MONITORING DATES:	12/23/80 - 4/4/81

Figure 57

Correlation of Ethylbenzene Concentration
with Wind Direction at Mariner's Harbor(36 Vectors)



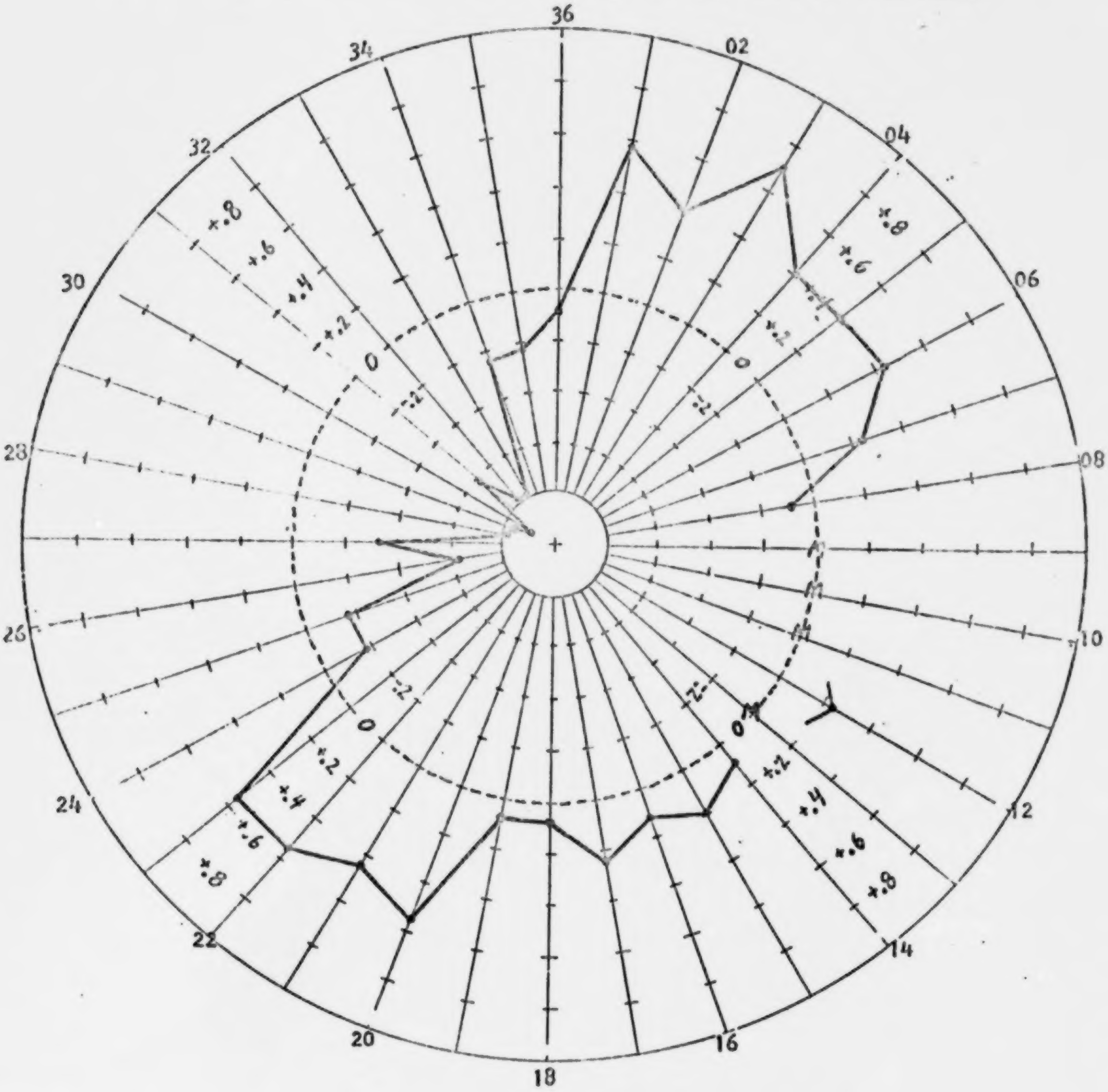
SITE: Mariner's Harbor

POLLUTANT: Ethylbenzene

MONITORING DATES: 12/23/80 - 4/4/81

Figure 58

Correlation of Styrene Concentration with Wind Direction at Mariner's Harbor (36 Vectors)



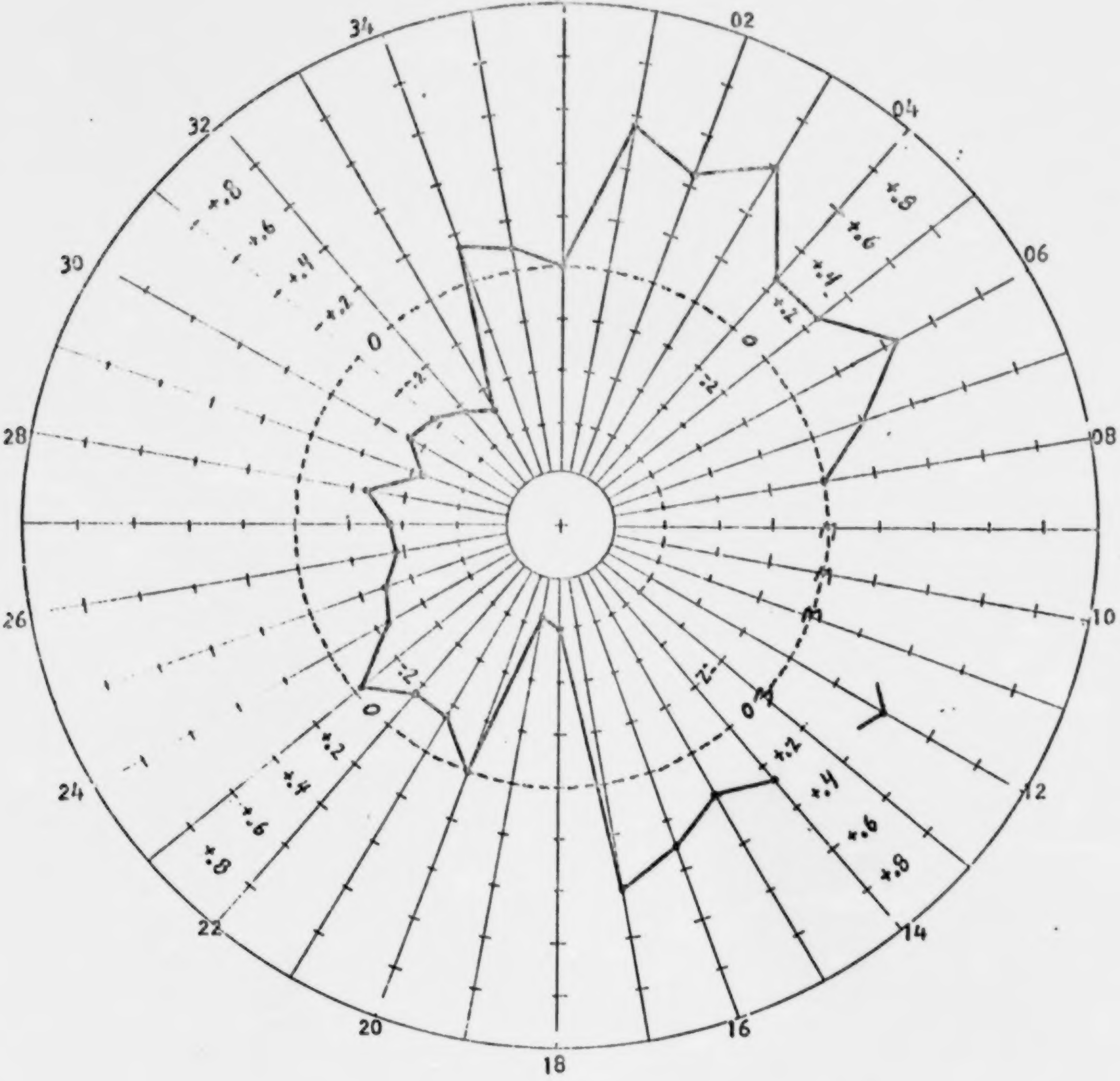
SITE: Mariner's Harbor

POLLUTANT: Styrene

MONITORING DATES: 12/23/80 - 4/4/81

Figure 59

Correlation of p-Xylene Concentration with Wind Direction at Mariner's Harbor(36 Vectors)



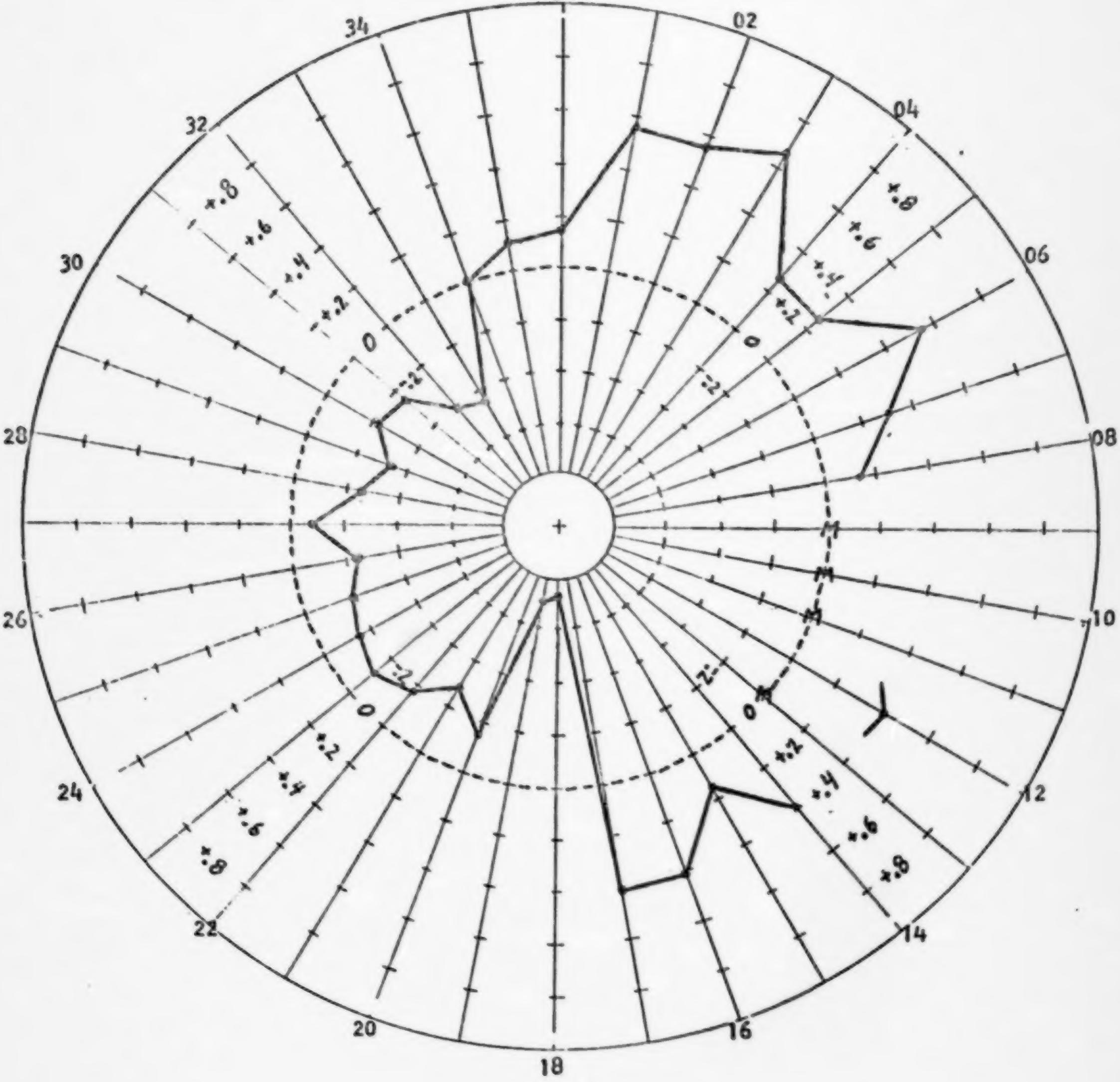
SITE: Mariner's Harbor

POLLUTANT: Para-xylene

MONITORING DATES: 12/23/80 - 4/4/81

Figure 60

Correlation of o-Xylene Concentration
with Wind Direction at Mariner's Harbor(36 Vectors)



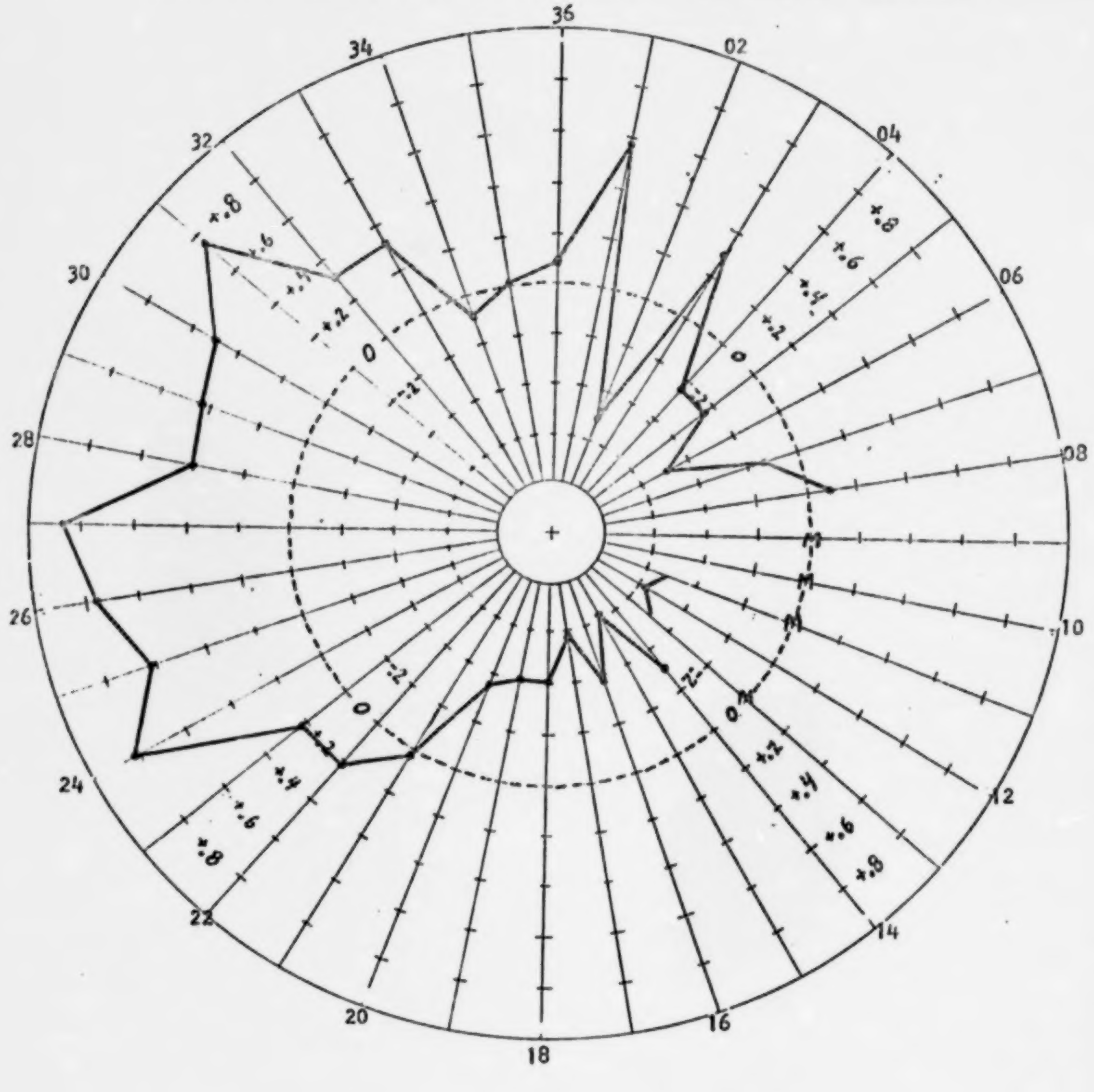
SITE: Mariner's Harbor

POLLUTANT: Ortho-xylene

MONITORING DATES: 12/23/80 - 4/4/81

Figure 61

Correlation of Chloroform Concentration with Wind Direction at Mariner's Harbor(36 Vectors)



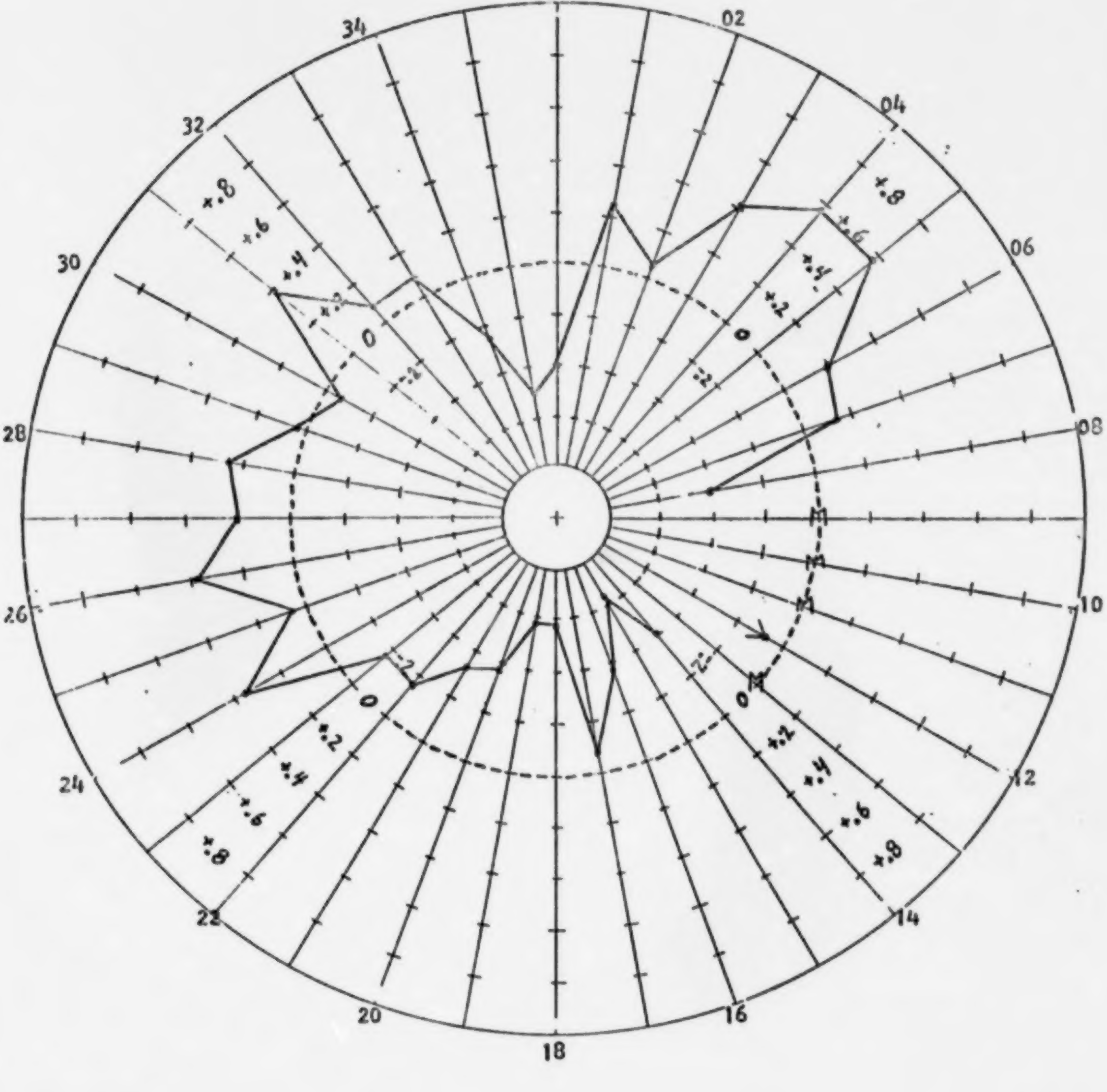
SITE: Mariner's Harbor

POLLUTANT: Chloroform

MONITORING DATES: 12/23/80 - 4/4/81

Figure 62

Correlation of Carbon Tetrachloride Concentration with Wind Direction at Mariner's Harbor(36 Vectors)



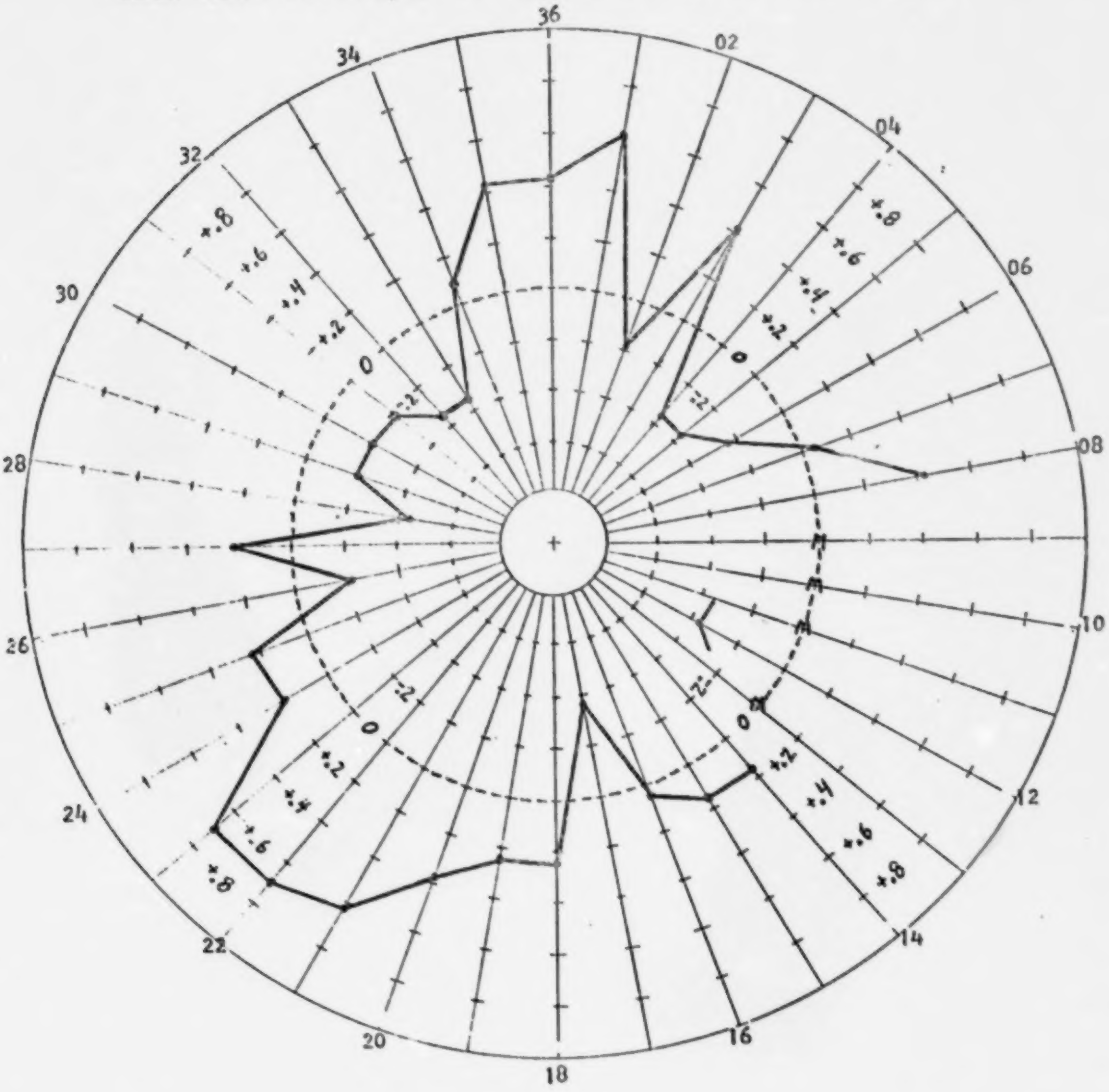
SITE: Mariner's Harbor

POLLUTANT: Carbon Tetrachloride

MONITORING DATES: 12/23/80 - 4/4/81

Figure 63

Correlation of Trichloroethylene Concentration
with Wind Direction at Mariner's Harbor(36 Vectors)



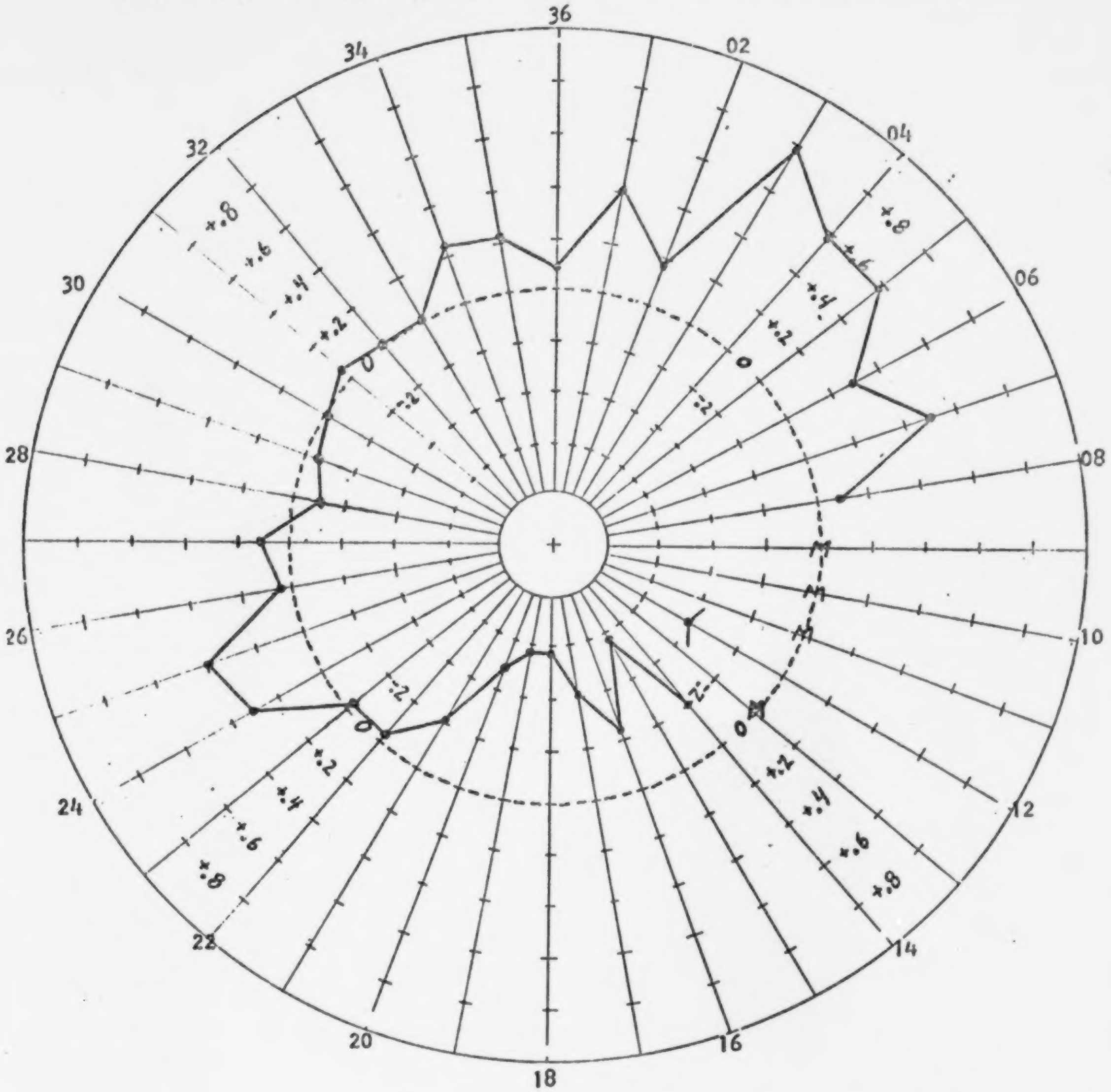
SITE: Mariner's Harbor

POLLUTANT: Trichloroethylene

MONITORING DATES: 12/23/80 - 4/4/81

Figure 64

Correlation of Tetrachloroethylene Concentration with Wind Direction at Mariner's Harbor(36 Vectors)



SITE:	Mariner's Harbor
POLLUTANT:	Tetrachloroethylene
MONITORING DATES:	12/30/80 - 4/4/81

Figure 65

close to 0.1 ppb at several widely separated locations. Our values are frequently lower than this, due to losses in analysis, as discussed earlier. Other compounds are reported at more varied levels probably due to nonconstant emission by sources. For example, the concentration of benzene and toluene in air, arising from nearby automobile sources, has been reported at levels ranging from 2 to over 100 ppb. The levels reported reflect the character of the area sampled. Benzene levels of 25 ppb in an urban area and 0.4 ppb in a rural wooded area show a difference of nearly two orders of magnitude. Values found in this work generally follow patterns and levels similar to those reported in other regions of the country where data are available for comparison.

A comparison of the average levels of tetrachloroethylene and trichloroethylene with those reported by other workers is shown in Table XXIII. The comparison indicates that the industrial locations sampled in New Jersey show, in general, similar or just slightly higher average concentrations for these species than those reported for other regions of the United States. This is not unexpected, because these values are average concentrations of a sampling location and encompass variations in wind and weather over a 12 or 24 month period.

A comparison of average benzene levels for the areas in this study with other values reported in the literature is shown in Table XXIV and toluene in Table XXV. These averages show that the New Jersey locations studied did not exhibit unusually high average levels of benzene or toluene, which can emanate from vehicular, as well as industrial sources.

The small sample size (concentrate from only one to two liters of air) utilized in this study resulted in optimum chromatography and qualitative identification but also provided relatively high detection limits of approximately 50 ppt. These detection limits prevented observation of many of the target species in this study when they were at or below these limits. The compounds tetrachloroethylene, trichloroethylene, benzene and toluene are included in Tables XXIII through XXV because of their high frequency of observation in our analysis and the relatively large number of reported concentrations for these compounds in the literature.

TABLE XXIII

COMPARISON OF TETRACHLOROETHYLENE AND TRICHLOROETHYLENE LEVELS (PPB)

Urban/Industrial	Tetrachloroethylene Average	Tetrachloroethylene Range	Tricloroethylene Average	Tricloroethylene Range
NJIT, Elizabeth, NJ*	1.54	0.0-14	0.26	0.0-6.4
NJIT, Newark, NJ*	0.98	0.0-32	0.25	0.0-1.9
NJIT, Camden, NJ*	1.76	0.0-30	0.43	0.0-3.5
Lillian, et al.,[11] New York, NY	4.5	1.0-9.75	0.71	0.11-1.1
Lillian, et al.,[11] Bayonne, NJ	1.63	0.30-8.2	0.92	0.05-8.8
Singh, et al.,[12] Los Angeles, CA	0.674	0.06-2.3	0.313	0.025-1.8
Pellizzari, et al.,[13] Central NJ	---	T-56	---	T-31
Simmonds, et al.,[14] Los Angeles, CA	1.25	0.3-3.8	---	---
Holtzer, et al.,[15] Tuscaloosa, AL	---	---	2.0	---
Pellizzari et. al.[13] Baton Rouge, LA	---	.001-.17	T	---
Pellizzari et. al.[13] Houston, TX	---	T-0.29	---	T-0.90
Pellizzari et. al.[13] Niagara Falls, NY.	---	.02-2.0	---	0-0.05
Singh et. al.,[16] Los Angeles, CA (1979)	1.4	---	0.40	---
Singh et. al.[16] Phoenix AZ	0.99	---	0.48	---
Singh et. al.[16] Oakland, CA	0.31	---	0.19	---
NJIT Manhattan, NY*	2.01	0.35-7.7	0.25	.01-2.0

---

*This study

TABLE XXIII (cont)

	Tetrachloroethylene		Trichloroethylene	
	Concentrations in ppb			
	Average	Range	Average	Range
Suburban				
Singh, et al.[16] Stanford Hills, CA	0.201	0.016-2.49	0.113	.010-5.49
Singh, et al.[16] Palm Springs, CA	0.278	0.018-1.15	0.04	.012-.83
NJIT, [17] Bridgewater Twp, NJ	0.30	0.05-0.99	0.35	.05-2.7
NJIT, [17] Piscataway, Middlesex, NJ	0.08	0.05-0.89	0.23	.05-0.89
NJIT, [17] Somerville Area, NJ	0.05	0.05-0.26	0.20	.05-1.0
NJIT,[*] Rutherford, NJ	1.10	0.00-9.2	1.15	.00-0.86
NJIT,[*] So. Amboy, NJ	0.22	0.00-2.2	0.40	.00-8.5
NJIT,[*] Travis, Staten Island, NY	0.25	0.03-.88	0.11	.01-.49
NJIT,[*] Mariners Harbor, Staten Is. NY	0.26	0.07-1.05	0.16	.01-1.8
Rural				
NJIT,[*] Basto, NJ	0.41	0.00-2.22	0.34	.00-8.5
Lillian, et al.,[11] White Face Mt., NY	0.7	0.02-.19	0.10	.05-.35
Lillian,[11] Wilmington, OH	0.15	0.02-.69	0.19	.05-.63
Lillian,[11] Sandy Hook, NJ	0.39	0.15-1.4	0.34	.05-.8
Singh, et al.[12] Yosemite, CA	0.031	0.015-.092	0.015	.014-.021
Singh, et al.[12] Point Reyes, CA	0.213	0.016-3.70	0.025	.012-.063
Russell, Shadoff,[18] Midland, MI	0.035	---	0.03	---
Rasmussen,[19] Pullman, WA	0.018	SD ±.008	0.021	SD ±.23
Holzer, et al.,[15] Talledga Nat'l Forrest, AL	---	---	0.2	---

--- indicates data not reported

[*] This study

TABLE XXIV

COMPARISION OF BENZENE LEVELS (PPB)$_v$

	AVERAGE	RANGE
Urban		
NJIT,* Elizabeth, NJ	7.16	-72
NJIT,* Newark, N.J.	1.73	.01-10.6
NJIT,* Camden, NJ	1.74	.19-8.1
Hester and Meyer[20], Newbury Pk., CA	1.8	1.2-6.0
Holtzer, et a[15] Tuscaloosa, AL	25	---
Bertsch, et al[21], Houston, TX	--	1.3-15
Thornberg and Colunutt[22], England	--	60-153
Pilar and Graydon,[23] Toronto, Canada	13	4-20
Johnson and Svenberg[24], Stockholm, Sweden	10	10-100[a]
Grob and Grob[25], Zurich	54	---
Lonneman, et al[26], Los Angeles, CA	15	-57
Louw, et al[27], Pretoria	5.8[b]	---
Louw, et al[27], Johannesburg	3.4[b]	---
Louw, et al[27], Durban	2.4[b]	---
Berghardt and Jeltes[28], The Hague	8.9	---
Singh et al[16], Los Angeles, CA	6.0	---
Singh et al[16], Phoenix, AZ	4.7	---
Singh et al[16], Oakland, CA	1.55	---
Neligan et al[29], Los Angeles, CA. (1969)	19.5	---
NJIT,* Manhattan, NY	2.58	0.6-10.8
Suburban		
NJIT,[17] Rutherford 1978	1.4	0.1-8.5
NJIT,[17] Bridgewater Township, NJ	1.4	0.3-7.9
NJIT,[17] Piscataway-Middlesex, NJ	1.0	0.3-1.9
NJIT,* Rutherford, NJ (1979-80)	2.98	0.01-19
NJIT,* South Amboy, NJ	1.38	0.0-8.8
NJIT,* Travis, Staten Island, NY	1.42	0.24-3.5
NJIT,* Mariners Harbor, Staten Is., NY	1.65	0.60-7.2

TABLE XXIV (cont)

COMPARISION OF BENZENE LEVELS (PPB)$_{v}$

	Average	Range	
Rural			
Arnts and Meeks[30], Smoky Mts.	0.89	---	
NJIT,* Basto, NJ (1979-80)	0.97	0.0-2.9	
Holtzer, el al[16], Talledga Nat'l Forest, Al.		0.4	---

a - low to high traffic

b - approximate

* - this study

TABLE XXV

COMPARISION OF TOLUENE LEVELS (PPB)$_v$

	AVERAGE	RANGE
Urban		
NJIT,* Newark (1979)	2.74	.01-13
NJIT,* Elizabeth (1979)	7.5	-85
NJIT,* Camden (1979)	6.9	.23-38
NJIT,* Manhattan, NYC	7.63	1.6-34.4
Singh et al[16], Los Angeles CA (1979)	11.7	0.5-49
Singh et al[16], Phoenix AZ	8.6	0.1-32
Singh et al[16], Oakland CA	3.11	0.1-14
Neligan[29], Los Angeles, CA	39	---
Hester and Meyer[20], Newbury Park, CA	0.3	0.8-12.5
Thornberg and Colnutt[17], England	---	29-72
Hasanen et al[31], Helsinki, Finland	17.4	---
Arnts and Meeks[30], Tulsa, OK,	1.95	---
Holtzer et. al.[15], Tuscaloosa, Al	38	24-85
Pilar and Graydon[23], Toronto	30	17-47
Suburban		
NJIT,* Rutherford NJ 1979-80	8.81	.01-33
NJIT,* So. Amboy NJ 1979	2.7	.00-9.7
NJIT,* Travis, Staten Island, NY	2.37	.15-7.7
NJIT,* Mariner's Harbor, Staten Island, NY	3.37	.7-19.5
Robinson et. al.[32] Camels Hump, VT	1.0	---
Sexton and Westberg[34], Janesville, WI	5.5	---
Hester and Meyer[20], Newbury Pk, CA	3.0	0.8-12.5
Rural		
NJIT,* Batsto, NJ (1979-80)	1.51	0-3.5
Cavanaugh et. al[34], Pt. Barrow, Alaska	---	0.1-0.4
Robinson et al[32], Moscow, WA	0.2	---
Robinson et al[32], Brethway-Gunderson Hill WA	0.1	---
Robinson et al[32], Hells Canyon, WA	0.4	
Robinson et. al.[32] Point Reyes, CA	0.3	---
Holtzer et al[15], Talledga Nat'l Forrest Al	0.4	0.2-1.3
Arnts and Meeks[30], Rio Blanco, CO	1.21	---
Arnts and Meeks[30], Smokey Mountains	0.96	---

*This study

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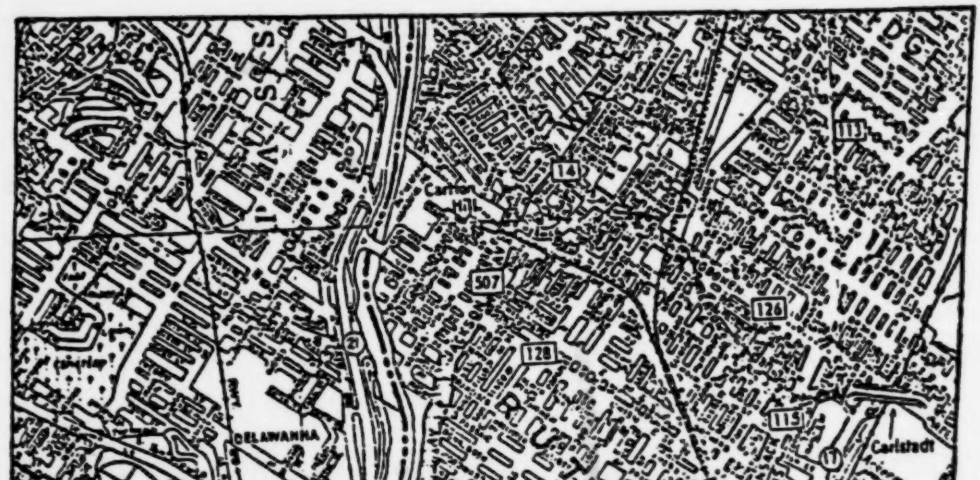
APPENDIX I

Maps of sampling locations

Figure 66

Rutherford Sampling Site Map



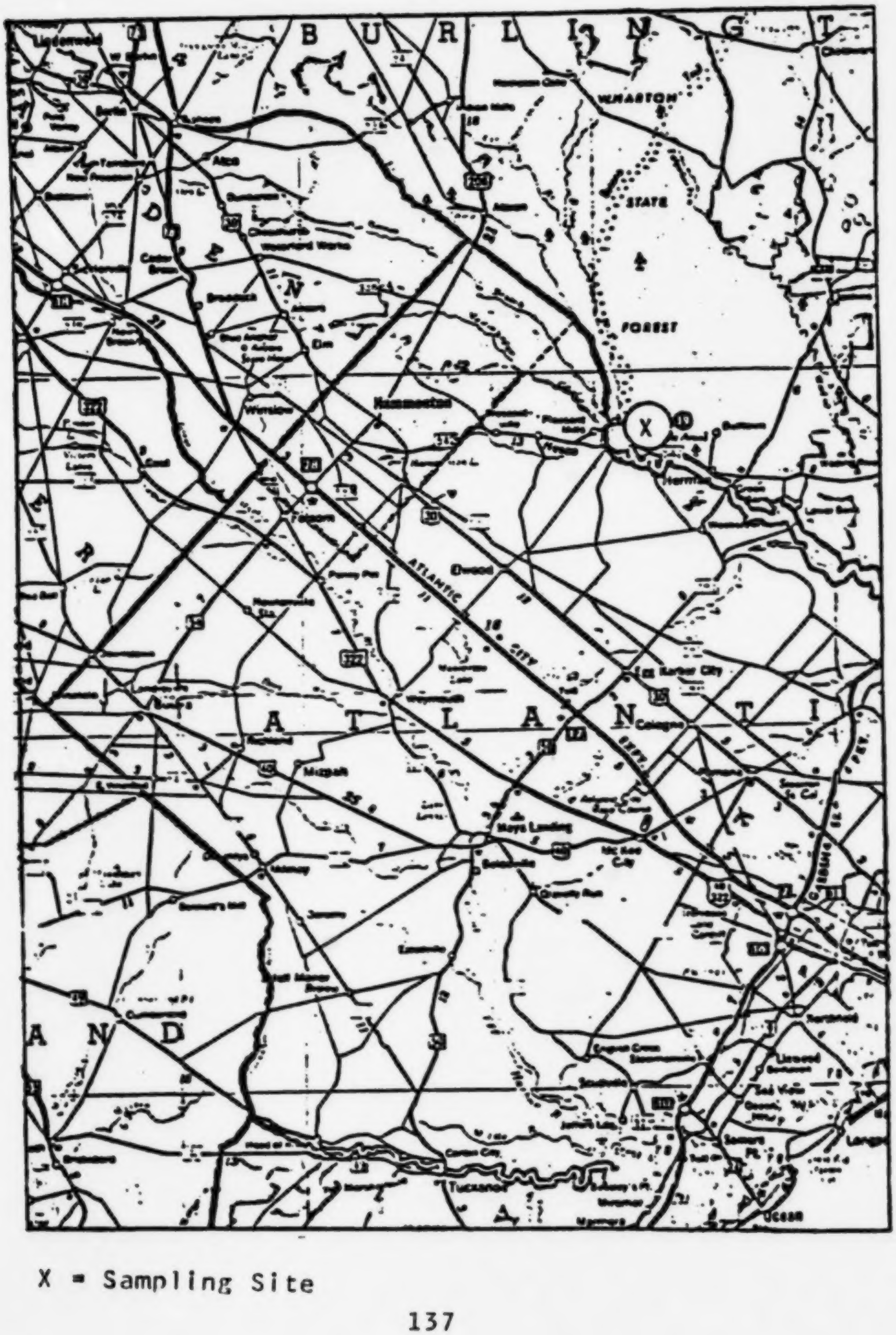
Carlton Hill
14
507
126
128
DELAWANNA
RUTHERFORD
115
17
Carlstadt
X
130
11
Kingsland
ERIE-LACKAWANNA
Berry's

X = Sampling Site

Reproduced from best available copy.

Figure 67

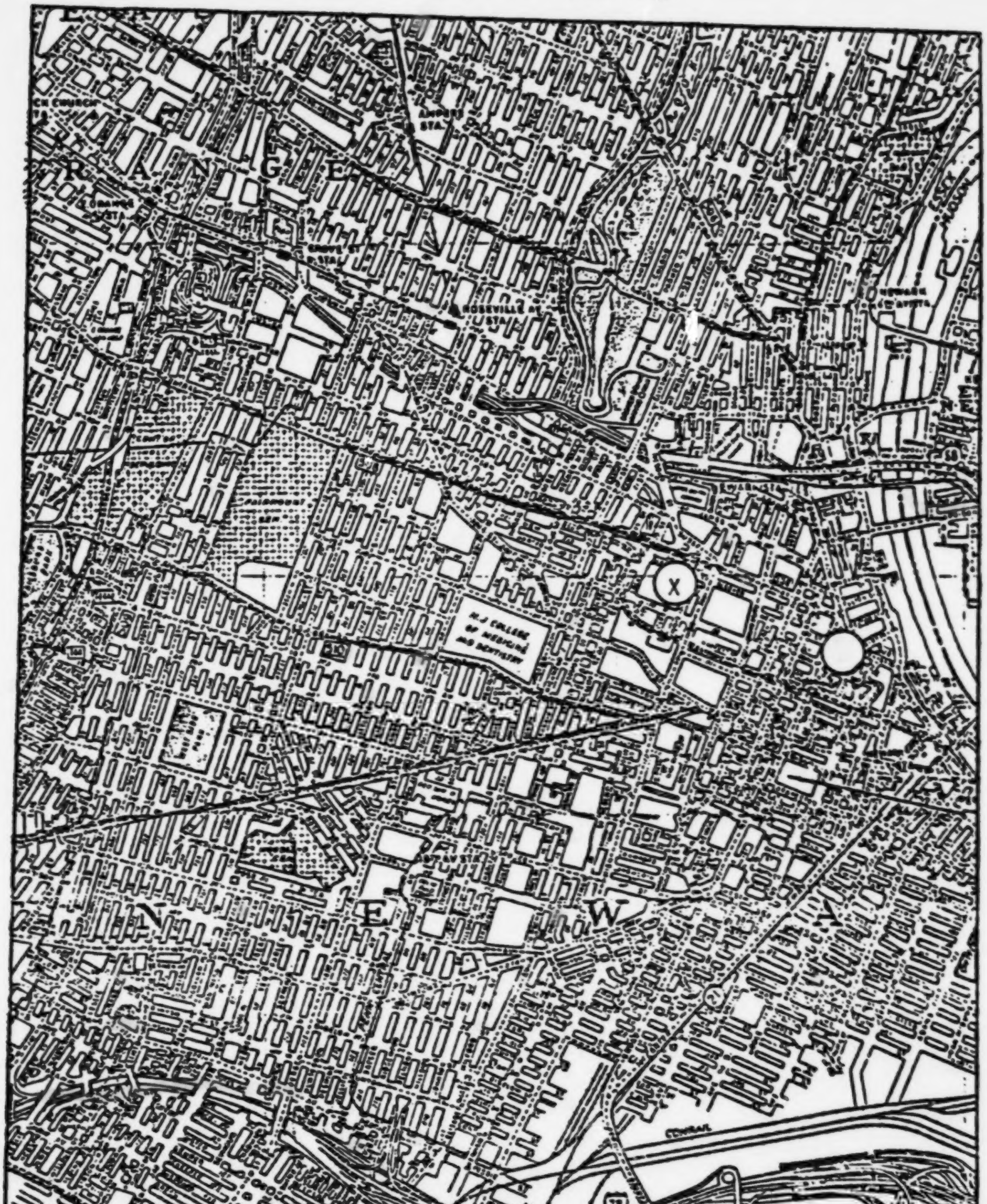
Batsto Sampling Site Map


B U R L I N G T
WHARTON
STATE
FOREST
D E N
Hammonton
Winslow
X
ATLANTIC CITY
Elwood
Egg Harbor City
A T L A N T I
Cologne
Mizpah
Mays Landing
A N D

X = Sampling Site

Figure 68

Newark Sampling Site Map

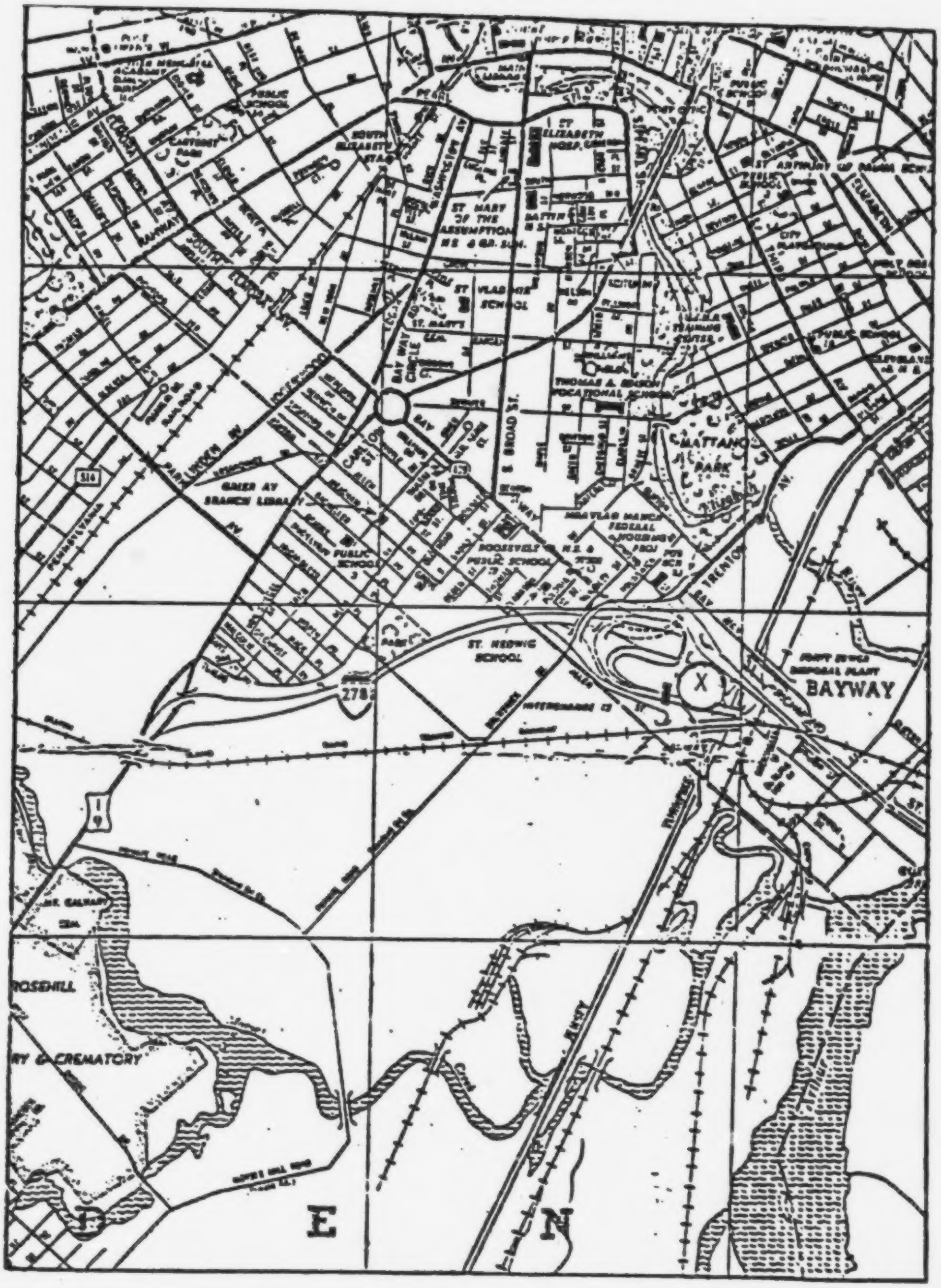

RANGE
ROSEVILLE AV STA
X
N.J. COLLEGE OF MEDICINE AND DENTISTRY
NEW
78

Reproduced from best available copy.

X = Sampling Site

Figure 69

Elizabeth Sampling Site Map

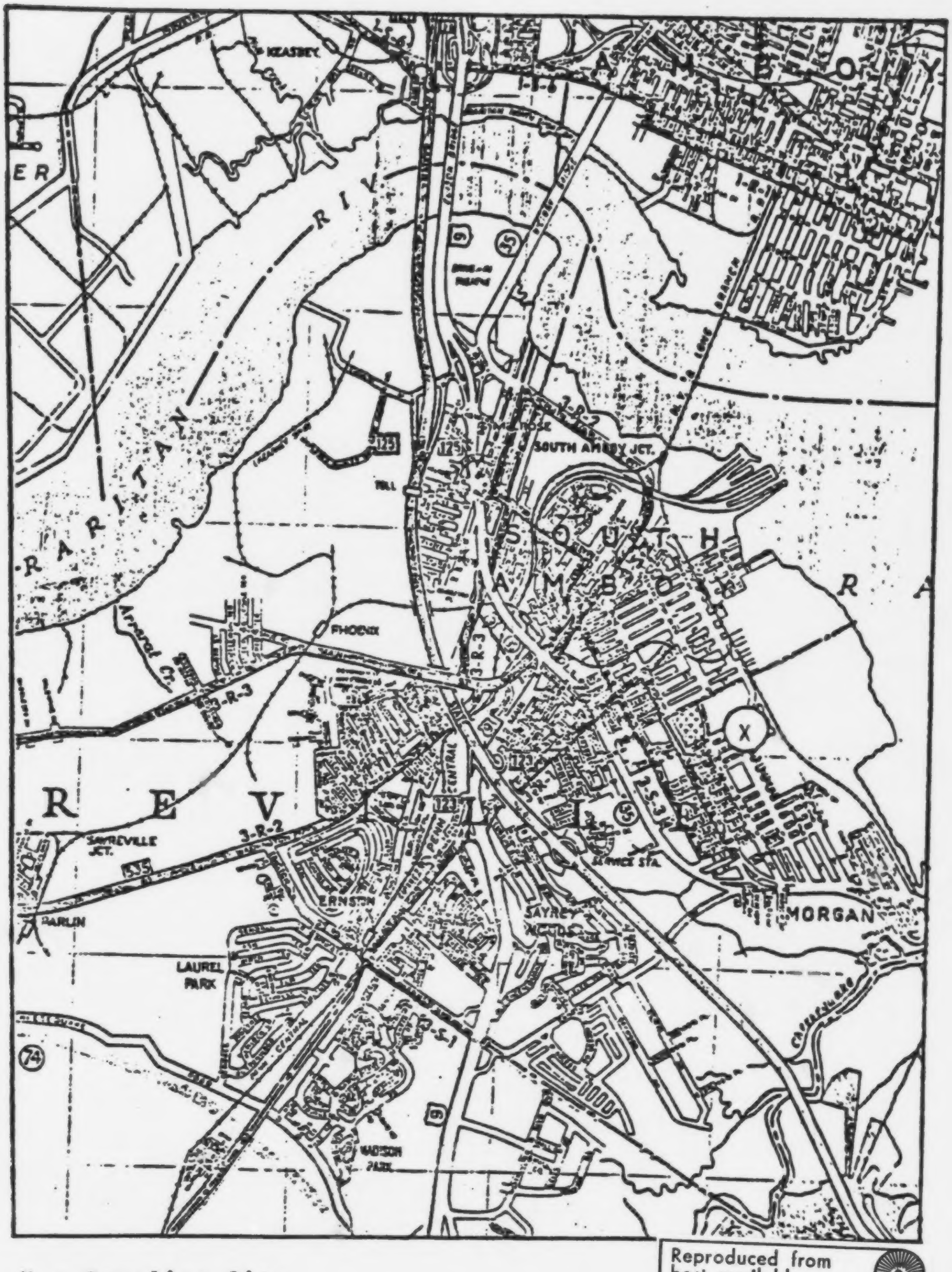


X
BAYWAY
ST. HEDWIG SCHOOL
ROOSEVELT PUBLIC SCHOOL
MATTANO PARK
THOMAS A. EDISON VOCATIONAL SCHOOL
S. BROAD ST.
BAY WAY CIRCLE
ST. MARY OF THE ASSUMPTION
GREER AV BRANCH LIBRARY
PUBLIC SCHOOL
278
1
9
ROSEHILL
CREMATORY
D
E
N

X = Sampling Site

Figure 70

South Amboy Sampling Site Map

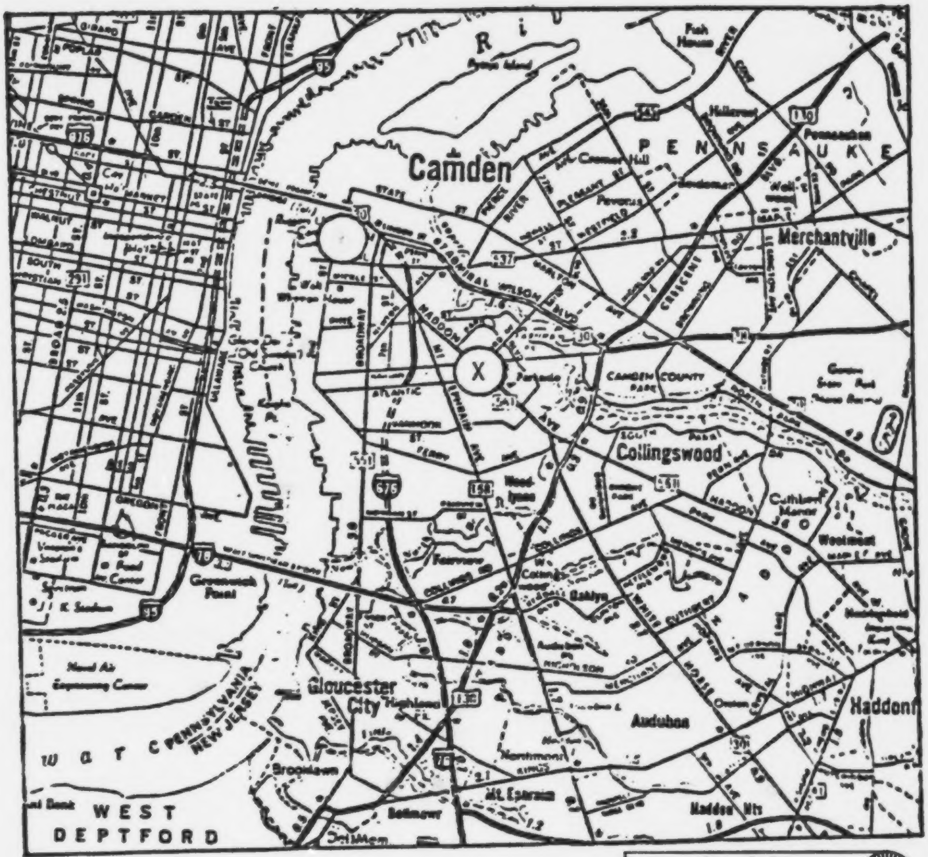

KEASBEY
RARITAN RIVER
SOUTH AMBOY JCT.
SOUTH AMBOY
PHOENIX
SAYREVILLE
SAYREVILLE JCT.
PARLIN
ERNSTON
LAUREL PARK
MADISON PARK
SERVICE STA.
MORGAN
X

X = Sampling Site

Reproduced from best available copy.

Figure 71

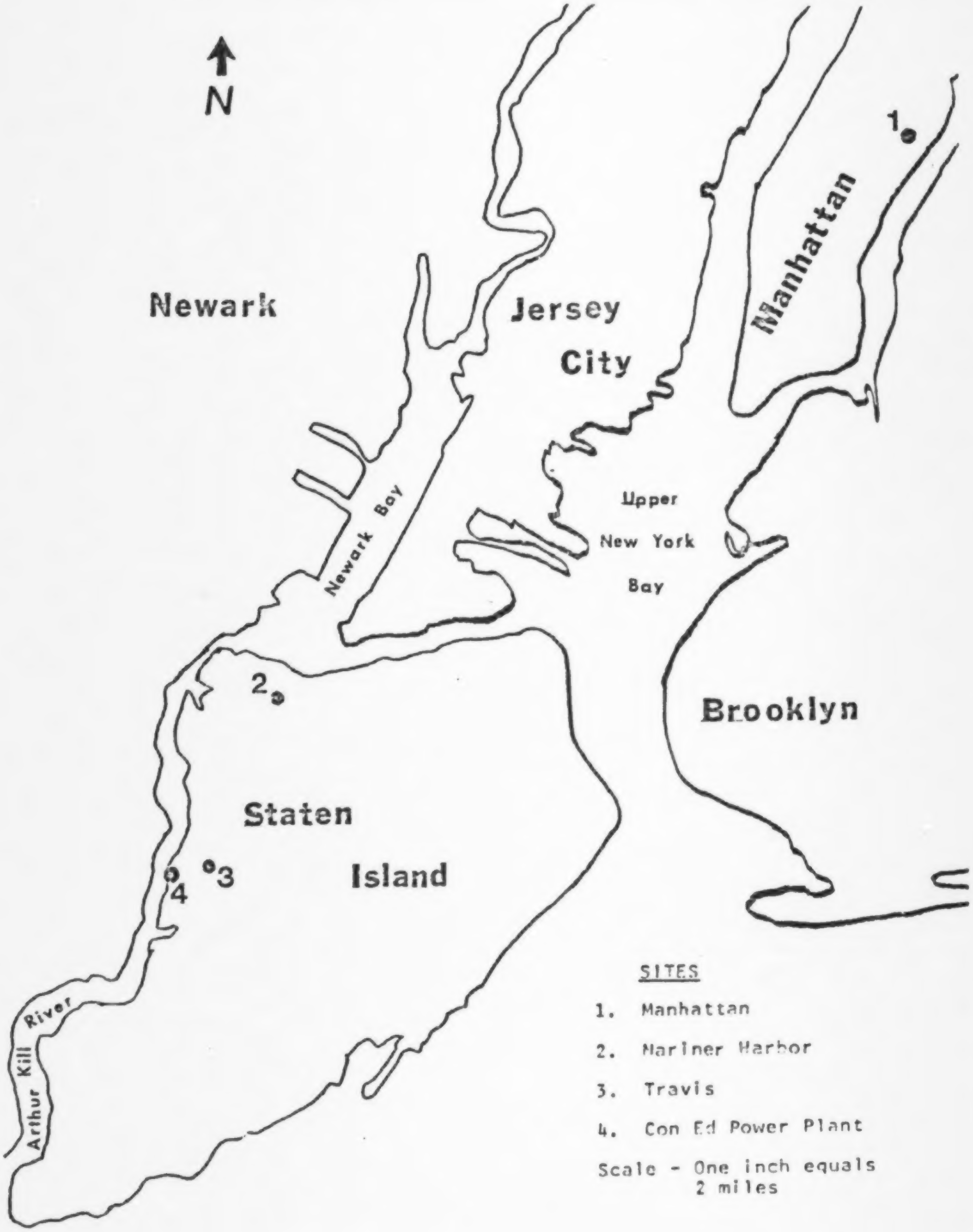
Camden Sampling Site Map


Camden
P E N N S A U K E
Merchantville
X
Collingswood
Gloucester City
Audubon
Haddonf
PENNSYLVANIA
NEW JERSEY
WEST
DEPTFORD

Reproduced from best available copy.

X = Sampling Site

Figure 72
Staten Island Sampling Site Map


N
Newark
Jersey City
Manhattan
1
Newark Bay
Upper New York Bay
Brooklyn
2
Staten Island
3
4
Arthur Kill River
SITES
1. Manhattan
2. Mariner Harbor
3. Travis
4. Con Ed Power Plant
Scale - One inch equals 2 miles

APPENDIX II
Quality Assurance Plan

Quality Assurance Plan

I. Sample Documentation

A--Sample documentation sheet shall contain the following information

- 1- Sampling section
  - a-Site
  - b-Pump identification
  - c-Trap identification number
  - d-Dates, starting and ending times
  - e-Weather observations
  - f-Flow meter readings at start and end of sampling
  - g-Comments on unusual occurrances
- 2- Analysis section
  - a-Date
  - b-Calibration factors
  - c-Calculations of sample volume
  - d-Comments on unusual occurrances
  - e-Operator

Sample documentation sheets are filed with the chromatograms and integrator output pages.

II. Sample Collection

A--Traps

1- One trap from each manifold batch is blanked. If this is found to be contaminated, the batch is recleaned and the blank is run again. The flow through each trap is checked to insure against plugging or channeling.

2- A field blank(control) and a spiked sample will be analyzed for each site each month.

3- Traps are disassembled after no more than 20 uses, or if controls indicate leaks. Glass fiber filters are changed regularly.

B--Sampling Pumps

1- If the starting and ending flow deviates by more than 20% from the average flow, the sample is discarded and pump is serviced on site if possible or replaced and returned to the lab for cleaning as necessary.

2- Rotameters in the field will be compared to a reference flowmeter which will be calibrated in the lab against a soap film flowmeter or wet test meter. Rotameters are checked for free movement before each use.

III. Sample Analysis

A--Calibration of GC

Gas chromatograph is calibrated for quantitation at the beginning and end of each run of samples vs. a purchased benzene standard. This standard is guaranteed by the manufacturer to be accurate to within 2%. The benzene factor is used with the relative response factors which have been determined, to generate calibration factors for each compound. The mixed standard is run at the start of ECD, and check the functioning of the instrument for changes in the column or contamination of the system.

B--Qualitative and quantitative analysis

1- Mass spectral analysis is performed on 10% of the samples.

2- FID and ECD are used for halogenated compounds.

3- Benzene calibration factors are plotted on the control chart daily.

4- Sample volumes are calculated by averaging the starting and ending flows, and multiplying by the elapsed time.

C--Data

1- Peaks of interest on the chromatogram are selected by the integrator by comparison with retention times of the standard. These selections are checked manually with reference to a spiked sample from that site and the ECD-FID peak ratios for halogenated compounds.

2- Data is independently checked by a second analyst and differences in peak selection and method of resolution are noted.

APPENDIX III

Analytical Data Tabulations

1979

Rutherford, NJ
Batsto, NJ
Newark, NJ
Elizabeth, NJ
South Amboy, NJ
Camden, NJ

1980

Rutherford,NJ
Batsto, NJ

1981

Mariner's Harbor, Staten Island, NY
Travis, Staten Island, NY
Yorkville, Manhattan, NY

1979
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	1/15	1/21	1/27	2/ 2	2/ 8	2/14
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.01	0.00	0.00	0.00	0.00
BENZENE.................	16.00	5.30	1.80	0.62	0.85	0.99
CARBON TETRACHLORIDE....	0.00	0.01	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE.......	8.60	6.00	0.01	0.01	0.01	0.54
1,4-DIOXANE.............	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE..	0.00	0.00	0.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE.................	23.00	7.60	1.50	0.99	1.10	1.20
1,2-DIBROMOETHANE.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
TETRACHLOROETHYLENE.....	3.10	1.20	0.09	0.50	0.01	0.08
CHLOROBENZENE...........	0.20	0.60	1.90	0.24	0.27	0.33
PARA/META XYLENES.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
ORTHO XYLENE............	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE............	0.01	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	2/20	2/26	3/ 4	3/10	3/16	3/22
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	*00.00	*00.00	*00.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.00	0.00	0.00	*00.00	*00.00	*00.00
1,2-DICHLOROETHANE......	0.00	0.00	0.01	*00.00	*00.00	*00.00
BENZENE.................	1.00	11.00	0.01	*00.00	*00.00	*00.00
CARBON TETRACHLORIDE....	0.00	0.00	3.20	*00.00	*00.00	*00.00
TRICHLOROETHYLENE.......	1.10	3.70	0.00	*00.00	*00.00	*00.00
1,4-DIOXANE.............	0.00	0.00	1.70	*00.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	0.00	0.00	0.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	*00.00	*00.00	*00.00
TOLUENE.................	2.90	20.00	0.00	*00.00	*00.00	*00.00
1,2-DIBROMOETHANE.......	*00.00	*00.00	3.80	*00.00	*00.00	*00.00
TETRACHLOROETHYLENE.....	0.29	3.10	*00.00	*00.00	*00.00	*00.00
CHLOROBENZENE...........	0.92	0.24	0.49	*00.00	*00.00	*00.00
PARA/META XYLENES.......	*00.00	*00.00	1.00	*00.00	*00.00	*00.00
ORTHO XYLENE............	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	0.00	0.00	*00.00	*00.00	*00.00	*00.00
NITROBENZENE............	0.00	0.00	0.00	*00.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	3/28	4/ 3	4/ 9	4/15	4/21	4/27
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	*00.00	*00.00	*00.00	0.00	*00.00
METHYL ETHYL KETONE.....	0.00	*00.00	*00.00	*00.00	0.00	*00.00
CHLOROFORM..............	0.00	*00.00	*00.00	*00.00	0.00	*00.00
1,2-DICHLOROETHANE......	0.00	*00.00	*00.00	*00.00	0.01	*00.00
BENZENE.................	1.90	*00.00	*00.00	*00.00	0.11	*00.00
CARBON TETRACHLORIDE....	0.00	*00.00	*00.00	*00.00	0.00	*00.00
TRICHLOROETHYLENE.......	0.00	*00.00	*00.00	*00.00	0.02	*00.00
1,4-DIOXANE.............	0.00	*00.00	*00.00	*00.00	0.00	*00.00
METHYL ISOBUTYL KETONE..	0.00	*00.00	*00.00	*00.00	0.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	*00.00	*00.00	*00.00	0.00	*00.00
TOLUENE.................	1.90	*00.00	*00.00	*00.00	0.18	*00.00
1,2-DIBROMOETHANE.......	0.00	*00.00	*00.00	*00.00	0.00	*00.00
TETRACHLOROETHYLENE.....	0.86	*00.00	*00.00	*00.00	0.40	*00.00
CHLOROBENZENE...........	0.13	*00.00	*00.00	*00.00	0.05	*00.00
PARA/META XYLENES.......	1.90	*00.00	*00.00	*00.00	0.12	*00.00
ORTHO XYLENE............	0.62	*00.00	*00.00	*00.00	0.03	*00.00
1,1,2,2TETRACHLOROETHANE	0.00	*00.00	*00.00	*00.00	0.00	*00.00
NITROBENZENE............	0.00	*00.00	*00.00	*00.00	0.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	5/ 3	5/ 9	5/15	5/21	5/27	6/ 2
VINYL CHLORIDE...........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	*00.00	*00.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	0.00	0.00	0.00	0.00
CHLOROFORM..............	*00.00	*00.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	*00.00	*00.00	0.00	0.00	0.00	0.00
BENZENE.................	*00.00	*00.00	0.00	0.00	0.46	0.00
CARBON TETRACHLORIDE....	*00.00	*00.00	4.00	1.80	2.40	1.60
TRICHLOROETHYLENE.......	*00.00	*00.00	0.00	0.00	0.00	0.00
1,4-DIOXANE.............	*00.00	*00.00	1.40	0.95	0.17	1.20
METHYL ISOBUTYL KETONE..	*00.00	*00.00	0.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE...	*00.00	*00.00	0.01	0.01	0.01	0.25
TOLUENE.................	*00.00	*00.00	0.00	0.00	0.00	0.00
1,2-DIBROMOETHANE.......	*00.00	*00.00	13.00	5.80	4.90	6.20
TETRACHLOROETHYLENE.....	*00.00	*00.00	0.00	0.00	0.01	0.25
CHLOROBENZENE...........	*00.00	*00.00	0.22	0.67	0.49	0.95
PARA/META XYLENES.......	*00.00	*00.00	0.09	1.20	0.12	0.52
ORTHO XYLENE............	*00.00	*00.00	6.10	2.00	3.00	4.30
1,1,2,2TETRACHLOROETHANE	*00.00	*00.00	4.40	1.70	0.85	1.30
NITROBENZENE............	*00.00	*00.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	6/ 8	6/14	6/20	6/26	7/ 2	7/ 8
VINYL CHLORIDE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE	*00.00	0.00	*00.00	0.00	0.00	0.00
METHYL ETHYL KETONE	*00.00	0.00	*00.00	0.00	0.00	0.00
CHLOROFORM	*00.00	0.00	*00.00	0.00	0.00	0.00
1,2-DICHLOROETHANE	*00.00	0.00	*00.00	0.00	0.00	0.00
BENZENE	*00.00	2.30	*00.00	3.60	1.30	0.01
CARBON TETRACHLORIDE	*00.00	0.00	*00.00	0.01	0.00	0.00
TRICHLOROETHYLENE	*00.00	1.80	*00.00	0.00	0.38	0.01
1,4-DIOXANE	*00.00	0.00	*00.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE	*00.00	0.00	*00.00	0.01	0.00	0.00
1,1,2-TRICHLOROETHANE	*00.00	0.00	*00.00	0.00	0.00	0.00
TOLUENE	*00.00	8.00	*00.00	7.40	3.80	0.01
1,2-DIBROMOETHANE	*00.00	0.01	*00.00	0.00	0.36	0.00
TETRACHLOROETHYLENE	*00.00	0.52	*00.00	1.10	0.28	0.01
CHLOROBENZENE	*00.00	0.06	*00.00	0.01	0.80	0.01
PARA/META XYLENES	*00.00	3.50	*00.00	2.30	1.90	0.01
ORTHO XYLENE	*00.00	2.80	*00.00	2.10	1.50	0.01
1,1,2,2TETRACHLOROETHANE	*00.00	0.00	*00.00	0.00	0.00	0.00
NITROBENZENE	*00.00	0.00	*00.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

```
                                      1979
                                 AT:RUTHERFORD
                             IN PARTS PER BILLION

COMPOUND NAME                  7/14     7/20     7/26     8/ 1     8/ 7     8/13

VINYL CHLORIDE...........    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,1-DICHLOROETHYLENE....     *00.00     0.00     0.00     0.00     0.00     0.00
METHYL ETHYL KETONE.....     *00.00     0.00     0.00     0.00   *00.00   *00.00
CHLOROFORM..............     *00.00     0.00     0.00     0.00     0.00     0.00
1,2-DICHLOROETHANE......     *00.00     0.00     0.00     0.00     0.00     0.00
BENZENE.................     *00.00     3.80     0.76     1.30     1.90     2.70
CARBON TETRACHLORIDE....     *00.00     0.00     0.00     0.00     0.00     0.00
TRICHLOROETHYLENE.......     *00.00     2.90     1.80     0.55     0.50     1.40
1,4-DIOXANE.............     *00.00     0.00     0.00     0.00   *00.00   *00.00
METHYL ISOBUTYL KETONE..     *00.00     0.00     0.00     0.00   *00.00   *00.00
1,1,2-TRICHLOROETHANE...     *00.00     0.00     0.00     0.00     0.00     0.00
TOLUENE.................     *00.00     9.70     5.00     7.70     9.90    14.00
1,2-DIBROMOETHANE.......     *00.00     0.00     0.00     0.95     1.50     0.00
TETRACHLOROETHYLENE.....     *00.00     1.30     0.51     1.40     0.85     0.86
CHLOROBENZENE...........     *00.00     1.40     0.23     0.17     1.00     0.58
PARA/META XYLENES.......     *00.00     7.80     2.50     6.60     5.50     2.70
ORTHO XYLENE............     *00.00     2.30     0.68     2.40     2.30     0.99
1,1,2,2TETRACHLOROETHANE     *00.00     0.00     0.00     0.00     0.00     0.00
NITROBENZENE............     *00.00     0.00     0.00     0.00     0.00     0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB
```

1979
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	8/19	8/25	8/31	9/ 6	9/12	9/18
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	*00.00	0.00
METHYL ETHYL KETONE.....	0.00	*00.00	0.00	0.00	*00.00	0.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	*00.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.00	*00.00	0.00
BENZENE.................	3.30	1.40	0.01	0.99	*00.00	1.80
CARBON TETRACHLORIDE....	0.00	0.00	0.00	0.00	*00.00	0.00
TRICHLOROETHYLENE.......	0.01	0.01	0.00	0.01	*00.00	0.67
1,4-DIOXANE.............	0.00	*00.00	0.00	0.00	*00.00	0.00
METHYL ISOBUTYL KETONE..	0.00	*00.00	0.00	0.00	*00.00	0.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	*00.00	0.00
TOLUENE.................	9.50	3.20	0.21	7.60	*00.00	10.00
1,2-DIBROMOETHANE.......	0.01	0.01	0.00	0.37	*00.00	0.01
TETRACHLOROETHYLENE.....	0.01	0.01	0.00	0.51	*00.00	0.01
CHLOROBENZENE...........	0.34	0.21	0.09	0.49	*00.00	0.30
PARA/META XYLENES.......	6.10	1.70	0.19	1.80	*00.00	3.70
ORTHO XYLENE............	1.60	0.50	0.12	0.59	*00.00	1.10
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.21	*00.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	9/24	9/30	10/ 6	10/12	10/18	10/24
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	0.32	0.01	0.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE.................	2.60	0.87	1.40	3.70	5.70	0.45
CARBON TETRACHLORIDE....	0.00	0.00	0.01	0.00	0.01	0.00
TRICHLOROETHYLENE.......	0.01	0.22	0.01	1.24	2.00	0.01
1,4-DIOXANE.............	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.01	0.00	0.00	0.00
TOLUENE.................	10.00	1.60	4.30	12.00	22.00	1.10
1,2-DIBROMOETHANE.......	0.00	0.00	0.00	0.00	0.00	0.00
TETRACHLOROETHYLENE.....	0.33	0.34	1.60	0.97	4.50	0.01
CHLOROBENZENE...........	0.28	0.20	0.17	0.48	0.88	0.00
PARA/META XYLENES.......	5.10	0.96	2.10	5.00	12.00	0.58
ORTHO XYLENE............	1.00	0.51	0.67	1.90	4.00	0.16
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	10/30	11/ 5	11/11	11/17	11/23	11/29
VINYL CHLORIDE..........	0.00	0.01	0.01	0.06	*00.00	0.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	0.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE.................	1.80	4.50	1.10	0.24	7.40	2.10
CARBON TETRACHLORIDE....	0.01	0.01	0.01	0.00	0.01	0.01
TRICHLOROETHYLENE.......	0.61	2.00	0.38	0.00	1.80	0.01
1,4-DIOXANE.............	*00.00	0.00	*00.00	*00.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	*00.00	0.00	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE.................	6.70	25.00	2.50	0.24	19.00	6.80
1,2-DIBROMOETHANE.......	0.00	0.00	0.17	0.00	2.90	0.00
TETRACHLOROETHYLENE.....	1.30	8.40	0.34	0.00	1.00	0.33
CHLOROBENZENE...........	0.19	0.85	0.00	0.00	12.00	0.01
PARA/META XYLENES.......	2.80	8.30	0.73	0.12	5.00	1.70
ORTHO XYLENE............	0.78	2.90	0.35	0.01	0.00	0.40
1,1,2,2TETRACHLOROETHANE	0.00	0.00	1.10	0.00	0.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	12/ 5	12/11	12/17	12/23	12/29
VINYL CHLORIDE...........	0.01	0.01	0.00	0.01	0.01
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.00	0.01	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.00	0.00
BENZENE................	5.10	2.60	0.24	5.90	1.50
CARBON TETRACHLORIDE....	0.00	0.01	0.00	0.01	0.01
TRICHLOROETHYLENE.......	0.00	8.40	0.00	0.81	0.01
1,4-DIOXANE.............	*00.00	*00.00	*00.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	0.00
TOLUENE.................	19.00	31.00	0.30	13.00	2.50
1,2-DIBROMOETHANE.......	0.00	0.77	0.00	0.00	0.00
TETRACHLOROETHYLENE.....	0.01	9.20	0.00	2.10	0.26
CHLOROBENZENE...........	0.00	1.20	0.00	0.87	0.10
PARA/META XYLENES.......	3.10	11.00	0.33	4.20	1.20
ORTHO XYLENE............	1.00	3.60	0.15	1.60	0.43
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	1/15	1/21	1/27	2/ 2	2/ 8	2/14
VINYL CHLORIDE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
METHYL ETHYL KETONE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,2-DICHLOROETHANE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
BENZENE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CARBON TETRACHLORIDE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
TRICHLOROETHYLENE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,4-DIOXANE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
METHYL ISOBUTYL KETONE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
TOLUENE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,2-DIBROMOETHANE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
TETRACHLOROETHYLENE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROBENZENE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
PARA/META XYLENES	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
ORTHO XYLENE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
NITROBENZENE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	2/20	2/26	3/ 4	3/10	3/16	3/22
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	*00.00	0.00	0.00	0.00	*00.00	0.00
METHYL ETHYL KETONE.....	*00.00	0.00	0.00	0.00	*00.00	0.00
CHLOROFORM..............	*00.00	0.00	0.00	0.00	*00.00	0.00
1,2-DICHLOROETHANE......	*00.00	0.00	0.00	0.00	*00.00	0.00
BENZENE................	*00.00	0.37	0.00	0.01	*00.00	0.00
CARBON TETRACHLORIDE....	*00.00	0.00	0.00	0.00	*00.00	0.00
TRICHLOROETHYLENE.......	*00.00	1.30	0.00	0.00	*00.00	0.00
1,4-DIOXANE.............	*00.00	0.00	0.00	0.00	*00.00	0.00
METHYL ISOBUTYL KETONE..	*00.00	0.00	0.00	0.00	*00.00	0.00
1,1,2-TRICHLOROETHANE...	*00.00	0.00	0.00	0.00	*00.00	0.00
TOLUENE................	*00.00	0.00	0.00	0.01	*00.00	0.00
1,2-DIBROMOETHANE.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
TETRACHLOROETHYLENE.....	*00.00	0.01	0.00	0.00	*00.00	0.00
CHLOROBENZENE...........	*00.00	0.11	2.10	0.00	*00.00	0.00
PARA/META XYLENES.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
ORTHO XYLENE............	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	*00.00	0.00	0.00	0.00	*00.00	0.00
NITROBENZENE............	*00.00	0.00	0.00	0.00	*00.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	3/28	4/ 3	4/ 9	4/15	4/21	4/27
VINYL CHLORIDE...........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	*00.00	*00.00	*00.00	*00.00
METHYL ETHYL KETONE.....	0.00	0.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.00	0.01	*00.00	*00.00	*00.00	*00.00
1,2-DICHLOROETHANE......	0.00	0.00	*00.00	*00.00	*00.00	*00.00
BENZENE.................	0.60	1.40	*00.00	*00.00	*00.00	*00.00
CARBON TETRACHLORIDE....	0.00	0.00	*00.00	*00.00	*00.00	*00.00
TRICHLOROETHYLENE.......	0.56	0.01	*00.00	*00.00	*00.00	*00.00
1,4-DIOXANE.............	0.00	0.00	*00.00	*00.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	0.11	0.00	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	*00.00	*00.00	*00.00	*00.00
TOLUENE.................	0.81	3.00	*00.00	*00.00	*00.00	*00.00
1,2-DIBROMOETHANE.......	0.00	0.01	*00.00	*00.00	*00.00	*00.00
TETRACHLOROETHYLENE.....	0.01	0.08	*00.00	*00.00	*00.00	*00.00
CHLOROBENZENE...........	0.16	1.10	*00.00	*00.00	*00.00	*00.00
PARA/META XYLENES.......	0.36	0.00	*00.00	*00.00	*00.00	*00.00
ORTHO XYLENE............	0.15	0.00	*00.00	*00.00	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	0.01	0.00	*00.00	*00.00	*00.00	*00.00
NITROBENZENE............	0.00	0.00	*00.00	*00.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	5/ 3	5/ 9	5/15	5/21	5/27	6/ 2
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	*00.00	*00.00	0.00	0.00	*00.00	*00.00
METHYL ETHYL KETONE.....	*00.00	*00.00	0.00	0.00	*00.00	*00.00
CHLOROFORM..............	*00.00	*00.00	0.00	0.00	*00.00	*00.00
1,2-DICHLOROETHANE......	*00.00	*00.00	0.00	0.00	*00.00	*00.00
BENZENE.................	*00.00	*00.00	0.39	0.36	*00.00	*00.00
CARBON TETRACHLORIDE....	*00.00	*00.00	0.00	0.00	*00.00	*00.00
TRICHLOROETHYLENE.......	*00.00	*00.00	1.20	0.00	*00.00	*00.00
1,4-DIOXANE.............	*00.00	*00.00	0.00	0.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	*00.00	*00.00	0.00	0.01	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	*00.00	*00.00	0.00	0.00	*00.00	*00.00
TOLUENE.................	*00.00	*00.00	0.54	0.22	*00.00	*00.00
1,2-DIBROMOETHANE.......	*00.00	*00.00	0.00	0.00	*00.00	*00.00
TETRACHLOROETHYLENE.....	*00.00	*00.00	0.01	0.01	*00.00	*00.00
CHLOROBENZENE...........	*00.00	*00.00	2.80	0.24	*00.00	*00.00
PARA/META XYLENES.......	*00.00	*00.00	0.22	0.35	*00.00	*00.00
ORTHO XYLENE............	*00.00	*00.00	0.18	0.01	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	*00.00	*00.00	0.00	0.00	*00.00	*00.00
NITROBENZENE............	*00.00	*00.00	0.00	0.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	6/ 8	6/14	6/20	6/26	7/ 2	7/ 8
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	*00.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM..............	*00.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	*00.00	0.00	0.00	0.00	0.00	0.00
BENZENE.................	*00.00	0.80	0.40	0.00	0.00	0.00
CARBON TETRACHLORIDE....	*00.00	0.00	0.00	0.49	0.69	0.44
TRICHLOROETHYLENE.......	*00.00	0.00	0.00	0.00	0.00	0.00
1,4-DIOXANE.............	*00.00	0.00	0.12	0.01	0.00	0.00
METHYL ISOBUTYL KETONE..	*00.00	0.00	0.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE...	*00.00	0.00	0.00	0.00	0.00	0.00
TOLUENE.................	*00.00	0.00	0.00	0.00	0.00	0.00
1,2-DIBROMOETHANE.......	*00.00	0.14	0.01	0.70	0.23	3.29
TETRACHLOROETHYLENE.....	*00.00	0.00	0.00	0.00	0.00	0.00
CHLOROBENZENE...........	*00.00	0.00	0.00	0.12	0.00	0.00
PARA/META XYLENES.......	*00.00	0.01	0.01	0.19	0.40	1.10
ORTHO XYLENE............	*00.00	0.57	0.01	0.55	0.17	0.01
1,1,2,2TETRACHLOROETHANE	*00.00	0.01	0.01	0.07	0.01	0.10
NITROBENZENE............	*00.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00

*0.00------NO ANALYSIS
0.00------BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	7/14	7/20	7/26	8/ 1	8/ 7	8/13
VINYL CHLORIDE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE	0.00	0.00	0.00	0.00	*00.00	*00.00
CHLOROFORM	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE	0.01	0.00	0.00	0.00	0.00	0.00
BENZENE	0.43	0.01	0.91	0.00	0.86	0.19
CARBON TETRACHLORIDE	0.00	0.00	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE	0.00	0.00	0.00	0.00	0.00	0.00
1,4-DIOXANE	0.00	0.00	0.00	0.00	*00.00	*00.00
METHYL ISOBUTYL KETONE	0.00	0.00	0.00	0.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE	0.43	0.29	1.00	0.00	0.66	0.22
1,2-DIBROMOETHANE	0.00	0.00	0.00	0.00	0.00	0.00
TETRACHLOROETHYLENE	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROBENZENE	1.00	0.00	0.00	0.00	0.00	0.00
PARA/META XYLENES	0.01	0.01	0.58	0.00	0.25	0.00
ORTHO XYLENE	0.01	0.01	0.13	0.00	0.58	0.00
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.88	0.00
NITROBENZENE	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	8/19	8/25	8/31	9/ 6	9/12	9/18
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	*00.00	0.00	0.00	0.00	0.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.01	0.00	0.00	0.00	0.00	0.00
BENZENE.................	0.53	0.23	0.29	0.38	0.29	0.29
CARBON TETRACHLORIDE....	0.00	0.00	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE.......	0.01	0.00	0.00	0.00	0.00	0.00
1,4-DIOXANE.............	0.00	*00.00	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE..	0.00	*00.00	0.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE.................	0.57	0.27	0.46	0.32	0.18	0.01
1,2-DIBROMOETHANE.......	0.00	0.00	0.00	0.00	0.00	0.00
TETRACHLOROETHYLENE.....	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROBENZENE...........	0.01	0.00	0.01	0.01	0.01	0.01
PARA/META XYLENES.......	0.25	0.01	0.01	0.01	0.01	0.01
ORTHO XYLENE............	0.01	0.01	0.01	0.01	0.01	0.01
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	9/24	9/30	10/ 6	10/12	10/18	10/24
VINYL CHLORIDE..........	0.00	0.00	0.00	0.00	0.01	0.01
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00	0.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE.................	0.42	0.85	0.70	0.60	0.47	0.50
CARBON TETRACHLORIDE....	0.00	0.00	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE.......	0.00	0.01	0.00	0.00	0.00	0.01
1,4-DIOXANE.............	*00.00	*00.00	*00.00	*00.00	*00.00	0.00
METHYL ISOBUTYL KETONE..	*00.00	*00.00	*00.00	*00.00	*00.00	0.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE.................	0.57	1.50	0.78	0.70	0.61	0.67
1,2-DIBROMOETHANE.......	0.00	0.00	0.00	0.00	0.00	0.00
TETRACHLOROETHYLENE.....	0.01	0.30	0.01	0.53	0.00	0.40
CHLOROBENZENE...........	0.01	0.59	0.00	0.01	0.01	0.20
PARA/META XYLENES.......	0.17	1.20	0.27	0.34	0.19	0.40
ORTHO XYLENE............	0.15	1.20	0.01	0.13	0.17	0.18
1,1,2,2TETRACHLOROETHANE	0.00	0.79	0.00	0.00	0.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	10/30	11/ 5	11/11	11/17	11/23	11/29
VINYL CHLORIDE..........	0.00	0.00	*00.00	0.00	0.00	0.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE.................	0.87	2.50	0.00	0.88	0.59	0.01
CARBON TETRACHLORIDE....	0.00	0.00	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE.......	0.00	0.00	0.00	0.01	0.01	0.00
1,4-DIOXANE.............	0.00	0.00	0.00	*00.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	0.00	0.00	0.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE.................	0.98	0.72	0.00	0.69	1.10	0.01
1,2-DIBROMOETHANE.......	0.00	0.00	0.00	0.00	0.01	0.00
TETRACHLOROETHYLENE.....	0.01	0.00	0.00	0.00	0.01	0.00
CHLOROBENZENE...........	0.01	0.01	0.00	0.01	1.30	0.00
PARA/META XYLENES.......	0.46	0.43	0.00	0.66	1.10	0.00
ORTHO XYLENE............	0.23	0.24	0.00	0.24	0.54	0.00
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	12/ 5	12/11	12/17	12/23	12/29
VINYL CHLORIDE..........	0.00	0.00	0.00	0.01	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.00	0.00
BENZENE.................	0.01	1.10	0.53	0.74	0.80
CARBON TETRACHLORIDE....	0.00	0.00	0.01	0.01	0.01
TRICHLOROETHYLENE.......	0.00	0.01	0.01	0.01	0.01
1,4-DIOXANE.............	*00.00	*00.00	*00.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.01	0.00	0.01
TOLUENE.................	0.00	0.95	0.15	0.55	0.36
1,2-DIBROMOETHANE.......	0.00	0.00	0.01	0.00	0.01
TETRACHLOROETHYLENE.....	0.00	0.01	0.01	0.00	0.01
CHLOROBENZENE...........	0.01	0.01	0.01	0.01	0.01
PARA/META XYLENES.......	0.01	0.25	0.06	0.22	0.07
ORTHO XYLENE............	0.01	0.27	0.08	0.14	0.08
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.01	0.00	0.01
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:NEWARK
IN PARTS PER BILLION

COMPOUND NAME	1/15	1/21	1/27	2/ 2	2/ 8	2/14
VINYL CHLORIDE...........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	*00.00	0.00	0.00	*00.00	0.00	*00.00
METHYL ETHYL KETONE.....	*00.00	0.00	0.00	*00.00	0.00	*00.00
CHLOROFORM..............	*00.00	0.00	0.00	*00.00	0.00	*00.00
1,2-DICHLOROETHANE......	*00.00	0.00	0.01	*00.00	0.01	*00.00
BENZENE.................	*00.00	2.40	0.01	*00.00	1.20	*00.00
CARBON TETRACHLORIDE....	*00.00	0.00	0.00	*00.00	0.00	*00.00
TRICHLOROETHYLENE.......	*00.00	0.01	0.00	*00.00	0.00	*00.00
1,4-DIOXANE.............	*00.00	0.00	0.00	*00.00	0.00	*00.00
METHYL ISOBUTYL KETONE..	*00.00	0.00	0.00	*00.00	0.00	*00.00
1,1,2-TRICHLOROETHANE...	*00.00	0.00	0.00	*00.00	0.00	*00.00
TOLUENE.................	*00.00	2.60	0.01	*00.00	1.20	*00.00
1,2-DIBROMOETHANE.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
TETRACHLOROETHYLENE.....	*00.00	0.06	0.01	*00.00	0.00	*00.00
CHLOROBENZENE...........	*00.00	0.35	0.01	*00.00	0.10	*00.00
PARA/META XYLENES.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
ORTHO XYLENE............	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	*00.00	0.00	0.00	*00.00	0.00	*00.00
NITROBENZENE............	*00.00	0.00	0.00	*00.00	0.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:NEWARK
IN PARTS PER BILLION

COMPOUND NAME	2/20	2/26	3/ 4	3/10	3/16	3/22
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	*00.00	0.00	*00.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	*00.00	0.00	*00.00	0.00
CHLOROFORM..............	0.00	0.00	*00.00	0.00	*00.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	*00.00	0.00	*00.00	0.00
BENZENE.................	1.10	1.70	*00.00	1.90	*00.00	5.40
CARBON TETRACHLORIDE....	0.00	0.00	*00.00	0.00	*00.00	0.00
TRICHLOROETHYLENE.......	0.34	1.90	*00.00	1.90	*00.00	0.01
1,4-DIOXANE.............	0.00	0.00	*00.00	0.00	*00.00	0.00
METHYL ISOBUTYL KETONE..	0.00	0.00	*00.00	0.00	*00.00	0.01
1,1,2-TRICHLOROETHANE...	0.00	0.00	*00.00	0.00	*00.00	0.00
TOLUENE.................	2.20	4.80	*00.00	4.60	*00.00	8.00
1,2-DIBROMOETHANE.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
TETRACHLOROETHYLENE.....	0.37	1.20	*00.00	2.30	*00.00	0.16
CHLOROBENZENE...........	0.11	0.24	*00.00	0.06	*00.00	0.91
PARA/META XYLENES.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
ORTHO XYLENE............	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	0.00	0.00	*00.00	0.00	*00.00	0.00
NITROBENZENE............	0.00	0.00	*00.00	0.00	*00.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:NEWARK
IN PARTS PER BILLION

COMPOUND NAME	3/28	4/ 3	4/ 9	4/15	4/21	4/27
VINYL CHLORIDE...........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	*00.00	0.00	*00.00	0.00	*00.00
METHYL ETHYL KETONE.....	0.00	*00.00	0.00	*00.00	0.00	*00.00
CHLOROFORM..............	0.00	*00.00	0.00	*00.00	0.00	*00.00
1,2-DICHLOROETHANE......	0.00	*00.00	0.01	*00.00	0.01	*00.00
BENZENE.................	1.50	*00.00	9.10	*00.00	0.42	*00.00
CARBON TETRACHLORIDE....	0.00	*00.00	0.01	*00.00	0.01	*00.00
TRICHLOROETHYLENE.......	0.70	*00.00	1.20	*00.00	0.57	*00.00
1,4-DIOXANE.............	0.00	*00.00	0.00	*00.00	0.00	*00.00
METHYL ISOBUTYL KETONE..	0.00	*00.00	0.00	*00.00	0.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	*00.00	0.00	*00.00
TOLUENE.................	0.40	*00.00	6.90	*00.00	0.60	*00.00
1,2-DIBROMOETHANE.......	0.00	*00.00	0.01	*00.00	0.00	*00.00
TETRACHLOROETHYLENE.....	0.15	*00.00	0.60	*00.00	0.00	*00.00
CHLOROBENZENE...........	2.90	*00.00	0.17	*00.00	0.02	*00.00
PARA/META XYLENES.......	1.80	*00.00	6.40	*00.00	0.46	*00.00
ORTHO XYLENE............	0.98	*00.00	1.40	*00.00	6.00	*00.00
1,1,2,2TETRACHLOROETHANE	0.00	*00.00	0.00	*00.00	0.00	*00.00
NITROBENZENE............	0.00	*00.00	0.00	*00.00	0.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:NEWARK
IN PARTS PER BILLION

COMPOUND NAME	5/ 3	5/ 9	5/15	5/21	5/27	6/ 2
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE.................	3.00	0.02	0.00	0.00	0.00	0.00
CARBON TETRACHLORIDE....	0.00	0.00	0.45	0.24	0.91	0.54
TRICHLOROETHYLENE.......	1.40	0.00	0.00	0.00	0.00	0.00
1,4-DIOXANE.............	0.00	0.00	0.01	0.01	0.01	0.00
METHYL ISOBUTYL KETONE..	0.01	0.00	0.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	0.01	0.00
TOLUENE.................	5.50	0.21	0.00	0.00	0.00	0.00
1,2-DIBROMOETHANE.......	0.45	0.02	0.41	0.92	1.50	0.26
TETRACHLOROETHYLENE.....	0.50	0.01	0.00	0.01	0.00	0.00
CHLOROBENZENE...........	0.16	0.02	0.35	0.12	0.01	0.00
PARA/META XYLENES.......	3.20	0.10	0.01	0.01	0.01	0.00
ORTHO XYLENE............	2.40	0.02	1.60	0.68	0.74	0.15
1,1,2,2TETRACHLOROETHANE	0.00	0.00	1.20	0.21	0.23	0.16
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	0.00
			0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

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                                   1979
                                AT:NEWARK
                           IN PARTS PER BILLION
COMPOUND NAME
                              6/ 8     6/14     6/20     6/26     7/ 2     7/ 8

VINYL CHLORIDE...........   *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,1-DICHLOROETHYLENE....      0.00     0.00     0.00     0.00     0.00     0.00
METHYL ETHYL KETONE.....      0.00     0.00     0.00     0.00     0.00     0.00
CHLOROFORM..............      0.00     0.00     0.00     0.00     0.00     0.00
1,2-DICHLOROETHANE......      0.00     0.00     0.00     0.00     0.00     0.00
BENZENE.................      0.51     0.56     0.40     2.40     0.18     0.25
CARBON TETRACHLORIDE....      0.00     0.00     0.00     0.00     0.00     0.00
TRICHLOROETHYLENE.......      0.00     0.00     0.00     0.00     0.00     0.00
1,4-DIOXANE.............      0.00     0.00     0.00     0.00     0.00     0.00
METHYL ISOBUTYL KETONE..      0.00     0.00     0.00     0.00     0.00     0.00
1,1,2-TRICHLOROETHANE...      0.00     0.00     0.00     0.00     0.00     0.00
TOLUENE.................      0.23     0.89     0.03     0.32     0.01     0.14
1,2-DIBROMOETHANE.......      0.00     0.00     0.00     0.00     0.00     0.00
TETRACHLOROETHYLENE.....      0.01     0.01     0.01     0.01     0.00     0.03
CHLOROBENZENE...........      0.12     0.06     0.09     1.30     0.01     0.06
PARA/META XYLENES.......      0.20     0.22     0.12     0.77     0.01     0.10
ORTHO XYLENE............      0.08     0.18     0.12     1.80     0.01     0.08
1,1,2,2TETRACHLOROETHANE      0.00     0.00     0.00     0.00     0.00     0.01
NITROBENZENE............      0.00     0.00     0.00     0.00     0.00     0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB
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1979
AT:NEWARK
IN PARTS PER BILLION

COMPOUND NAME	7/14	7/20	7/26	8/ 1	8/ 7	8/13
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	0.00	*00.00	*00.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.01	0.00	0.00	0.00	0.00	0.00
BENZENE.................	0.26	0.36	0.23	0.55	2.60	1.40
CARBON TETRACHLORIDE....	0.00	0.00	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE.......	0.13	0.01	0.01	0.35	0.59	0.01
1,4-DIOXANE.............	0.00	0.00	0.00	0.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	0.00	0.00	0.00	0.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE.................	3.00	0.95	0.22	2.60	9.00	0.63
1,2-DIBROMOETHANE.......	0.00	0.00	0.00	0.17	0.00	0.00
TETRACHLOROETHYLENE.....	0.17	0.01	0.01	0.27	0.82	0.00
CHLOROBENZENE...........	0.22	0.01	0.00	0.54	0.47	0.36
PARA/META XYLENES.......	2.60	0.69	0.13	2.10	4.30	0.01
ORTHO XYLENE............	0.68	0.10	0.03	0.56	0.93	0.01
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979

AT:NEWARK

IN PARTS PER BILLION

COMPOUND NAME	8/19	8/25	8/31	9/ 6	9/12	9/18
VINYL CHLORIDE...........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	*00.00	0.00
METHYL ETHYL KETONE.....	0.00	*00.00	0.00	0.00	*00.00	0.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	*00.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.00	*00.00	0.00
BENZENE.................	1.40	3.30	1.40	0.79	*00.00	0.00
CARBON TETRACHLORIDE....	0.00	0.00	0.00	0.00	*00.00	2.40
TRICHLOROETHYLENE.......	0.00	0.01	0.01	0.00	*00.00	0.00
1,4-DIOXANE.............	0.00	*00.00	0.00	0.00	*00.00	0.00
METHYL ISOBUTYL KETONE..	0.00	*00.00	0.00	0.00	*00.00	0.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	*00.00	0.00
TOLUENE.................	1.70	2.50	3.80	0.84	*00.00	1.60
1,2-DIBROMOETHANE.......	0.00	0.01	0.52	0.00	*00.00	0.00
TETRACHLOROETHYLENE.....	0.00	0.01	0.66	0.01	*00.00	0.00
CHLOROBENZENE...........	0.24	0.09	0.40	0.14	*00.00	0.14
PARA/META XYLENES.......	1.40	2.20	3.70	0.69	*00.00	0.70
ORTHO XYLENE............	0.44	2.70	1.20	0.23	*00.00	0.22
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	*00.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:NEWARK
IN PARTS PER BILLION

COMPOUND NAME	9/24	9/30	10/ 6	10/12	10/18	10/24
VINYL CHLORIDE...........	*00.00	0.00	0.00	0.00	0.01	0.01
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.01	*00.00	0.00
BENZENE.................	0.65	1.10	0.29	0.60	0.00	0.01
CARBON TETRACHLORIDE....	0.00	0.00	0.01	0.00	1.20	0.55
TRICHLOROETHYLENE.......	0.01	0.00	0.01	0.00	0.01	0.01
1,4-DIOXANE.............	*00.00	*00.00	*00.00	*00.00	0.93	0.01
METHYL ISOBUTYL KETONE..	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	*00.00	*00.00
TOLUENE.................	1.50	1.40	0.55	1.80	0.00	0.00
1,2-DIBROMOETHANE.......	0.01	0.00	0.01	0.07	4.90	1.30
TETRACHLOROETHYLENE.....	3.80	0.00	0.01	0.35	0.00	0.01
CHLOROBENZENE...........	0.14	0.01	0.01	0.45	1.90	0.36
PARA/META XYLENES.......	1.30	0.33	0.31	1.40	0.16	0.24
ORTHO XYLENE............	0.34	0.01	0.01	0.68	2.50	0.76
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.39	0.98	0.53
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:NEWARK
IN PARTS PER BILLION

COMPOUND NAME	10/30	11/ 5	11/11	11/17	11/23	11/29
VINYL CHLORIDE..........	0.00	0.01	0.00	0.01	0.01	0.57
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	0.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.00	0.00	0.00	0.01	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.01	0.00	0.00	0.00	0.00
BENZENE.................	0.16	1.40	1.70	2.10	0.00	0.01
CARBON TETRACHLORIDE....	0.01	0.01	0.01	0.00	0.97	3.50
TRICHLOROETHYLENE.......	0.01	1.10	0.01	0.00	0.01	0.00
1,4-DIOXANE.............	*00.00	0.00	0.00	*00.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	*00.00	0.00	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.01	0.00	0.00
TOLUENE.................	0.53	8.60	2.80	1.60	0.94	5.70
1,2-DIBROMOETHANE.......	0.00	0.01	0.97	0.00	0.00	0.00
TETRACHLOROETHYLENE.....	0.18	2.50	0.01	0.00	0.01	0.01
CHLOROBENZENE...........	0.01	0.35	0.67	0.43	0.00	0.01
PARA/META XYLENES.......	0.23	4.00	2.00	1.00	0.42	1.20
ORTHO XYLENE............	0.08	1.20	0.89	0.50	0.16	0.42
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.97	0.00	0.01	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:NEWARK
IN PARTS PER BILLION

COMPOUND NAME	12/ 5	12/11	12/17	12/23	12/29
VINYL CHLORIDE..........	*00.00	0.01	0.00	0.00	0.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.01	0.00	0.00	0.00	0.00
BENZENE.................	4.10	0.73	0.86	2.40	1.80
CARBON TETRACHLORIDE....	0.00	0.01	0.00	0.00	0.01
TRICHLOROETHYLENE.......	0.81	0.16	0.01	0.01	0.01
1,4-DIOXANE.............	*00.00	*00.00	*00.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.01	0.00	0.00	0.00
TOLUENE.................	3.70	12.00	1.30	4.60	2.60
1,2-DIBROMOETHANE.......	1.00	0.52	0.00	0.00	0.00
TETRACHLOROETHYLENE.....	32.00	0.01	0.01	0.01	0.01
CHLOROBENZENE...........	1.90	5.70	0.01	0.10	0.01
PARA/META XYLENES.......	31.00	16.00	0.42	1.70	1.30
ORTHO XYLENE............	9.80	5.40	0.16	0.59	0.50
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:ELIZABETH
IN PARTS PER BILLION

COMPOUND NAME	1/15	1/21	1/27	2/ 2	2/ 8	2/14
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.01	0.00	0.01	0.00	0.01	0.00
BENZENE.................	3.70	6.90	7.40	4.30	0.99	2.80
CARBON TETRACHLORIDE....	0.01	0.00	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE.......	0.01	0.01	5.40	0.28	0.01	1.00
1,4-DIOXANE.............	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE..	0.00	0.00	0.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE.................	7.80	5.20	3.60	3.60	1.70	2.60
1,2-DIBROMOETHANE.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
TETRACHLOROETHYLENE.....	14.00	0.43	1.10	1.20	0.15	0.41
CHLOROBENZENE...........	5.20	0.33	0.75	0.38	0.00	0.21
PARA/META XYLENES.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
ORTHO XYLENE............	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:ELIZABETH
IN PARTS PER BILLION

COMPOUND NAME	2/20	2/26	3/ 4	3/10	3/16	3/22
VINYL CHLORIDE...........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM..............	0.00	0.01	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE.................	3.10	2.70	15.00	7.80	1.10	33.00
CARBON TETRACHLORIDE....	0.00	0.00	0.00	0.00	0.01	0.00
TRICHLOROETHYLENE.......	1.80	1.40	1.40	0.20	1.20	0.01
1,4-DIOXANE.............	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE..	0.00	0.00	0.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.01	0.00	0.00	0.00
TOLUENE.................	3.70	3.00	6.90	11.00	3.30	11.00
1,2-DIBROMOETHANE.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
TETRACHLOROETHYLENE.....	0.57	0.95	0.60	5.20	0.63	0.26
CHLOROBENZENE...........	0.29	0.13	0.14	9.10	0.44	0.48
PARA/META XYLENES.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
ORTHO XYLENE............	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:ELIZABETH
IN PARTS PER BILLION

COMPOUND NAME	3/28	4/ 3	4/ 9	4/15	4/21	4/27
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	*00.00	0.00	*00.00	0.00	*00.00
METHYL ETHYL KETONE.....	0.00	*00.00	0.00	*00.00	0.00	*00.00
CHLOROFORM..............	0.00	*00.00	0.00	*00.00	0.00	*00.00
1,2-DICHLOROETHANE......	0.00	*00.00	0.00	*00.00	0.00	*00.00
BENZENE.................	15.00	*00.00	2.00	*00.00	5.80	*00.00
CARBON TETRACHLORIDE....	0.01	*00.00	0.00	*00.00	0.01	*00.00
TRICHLOROETHYLENE.......	0.01	*00.00	0.52	*00.00	0.01	*00.00
1,4-DIOXANE.............	0.00	*00.00	0.00	*00.00	0.00	*00.00
METHYL ISOBUTYL KETONE..	0.00	0.00	0.01	*00.00	0.01	*00.00
1,1,2-TRICHLOROETHANE...	0.00	*00.00	0.00	*00.00	0.00	*00.00
TOLUENE.................	2.80	*00.00	3.70	*00.00	0.78	*00.00
1,2-DIBROMOETHANE.......	0.00	*00.00	0.01	*00.00	0.01	*00.00
TETRACHLOROETHYLENE.....	0.01	*00.00	0.25	*00.00	0.06	*00.00
CHLOROBENZENE...........	0.12	*00.00	0.40	*00.00	0.09	*00.00
PARA/META XYLENES.......	3.20	*00.00	5.30	*00.00	1.00	*00.00
ORTHO XYLENE............	0.87	*00.00	1.10	*00.00	0.25	*00.00
1,1,2,2TETRACHLOROETHANE	0.00	*00.00	0.00	*00.00	0.00	*00.00
NITROBENZENE............	0.00	*00.00	0.00	*00.00	0.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:ELIZABETH
IN PARTS PER BILLION

COMPOUND NAME	5/ 3	5/ 9	5/15	5/21	5/27	6/ 2
VINYL CHLORIDE...........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	*00.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	*00.00	0.00	0.00
CHLOROFORM..............	0.00	0.00	0.00	*00.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	*00.00	0.00	0.00
BENZENE.................	0.58	0.05	12.00	*00.00	5.40	14.00
CARBON TETRACHLORIDE....	0.00	0.00	0.00	*00.00	0.01	0.00
TRICHLOROETHYLENE.......	0.01	0.00	1.70	*00.00	0.51	0.82
1,4-DIOXANE.............	0.00	0.00	0.00	*00.00	0.00	0.00
METHYL ISOBUTYL KETONE..	0.01	0.00	1.00	*00.00	0.01	0.12
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	*00.00	0.00	0.00
TOLUENE.................	0.44	0.24	12.00	*00.00	3.20	4.10
1,2-DIBROMOETHANE.......	0.65	0.00	0.01	*00.00	2.30	0.01
TETRACHLOROETHYLENE.....	0.25	0.00	3.70	*00.00	0.74	0.71
CHLOROBENZENE...........	0.41	0.01	1.20	*00.00	0.12	0.49
PARA/META XYLENES.......	0.67	0.82	12.00	*00.00	3.06	4.30
ORTHO XYLENE............	0.47	0.37	8.70	*00.00	1.10	1.30
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	*00.00	0.00	0.00
NITROBENZENE............	0.00	0.00	0.00	*00.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:ELIZABETH
IN PARTS PER BILLION

COMPOUND NAME	6/ 8	6/14	6/20	6/26	7/ 2	7/ 8
VINYL CHLORIDE...........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE.................	1.40	0.01	1.10	0.69	1.80	0.01
CARBON TETRACHLORIDE....	0.00	0.00	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE.......	0.00	0.00	0.00	0.00	0.00	0.00
1,4-DIOXANE.............	0.00	0.00	0.00	0.00	0.90	0.01
METHYL ISOBUTYL KETONE..	0.01	0.00	0.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE.................	0.32	0.14	0.46	0.55	2.60	0.01
1,2-DIBROMOETHANE.......	0.01	0.00	0.00	0.01	0.00	0.00
TETRACHLOROETHYLENE.....	0.01	0.00	0.00	0.21	0.44	0.01
CHLOROBENZENE...........	0.06	0.01	0.01	0.09	0.18	0.01
PARA/META XYLENES.......	0.27	0.01	0.25	0.35	2.40	0.01
ORTHO XYLENE............	0.08	0.01	0.16	0.28	1.90	0.01
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:ELIZABETH
IN PARTS PER BILLION

COMPOUND NAME	7/14	7/20	7/26	8/ 1	8/ 7	8/13
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	*00.00	*00.00
1,2-DICHLOROETHANE......	0.01	0.00	0.00	0.00	0.00	0.00
BENZENE.................	0.48	62.00	2.70	1.10	18.00	5.00
CARBON TETRACHLORIDE....	0.00	0.00	0.00	0.01	0.00	0.00
TRICHLOROETHYLENE.......	0.00	4.00	1.40	0.01	0.01	0.01
1,4-DIOXANE.............	0.00	0.00	0.00	0.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	0.00	0.00	0.00	0.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.01	0.00	0.00
TOLUENE.................	2.80	33.00	6.30	0.00	8.30	1.40
1,2-DIBROMOETHANE.......	0.00	0.00	0.00	0.33	0.00	0.00
TETRACHLOROETHYLENE.....	0.25	2.80	0.31	0.00	0.01	0.73
CHLOROBENZENE...........	0.15	0.91	0.28	0.00	3.40	2.80
PARA/META XYLENES.......	1.80	47.00	5.60	1.20	13.00	2.30
ORTHO XYLENE............	1.00	17.00	1.10	2.10	1.70	1.90
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:ELIZABETH
IN PARTS PER BILLION

COMPOUND NAME	8/19	8/25	8/31	9/ 6	9/12	9/18
VINYL CHLORIDE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE	0.00	*00.00	0.00	0.00	0.00	0.00
CHLOROFORM	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE	5.60	3.10	12.00	0.01	0.00	0.00
CARBON TETRACHLORIDE	0.00	0.00	0.00	0.00	5.10	11.00
TRICHLOROETHYLENE	0.17	0.01	0.01	0.00	0.00	0.00
1,4-DIOXANE	0.00	*00.00	0.00	0.00	0.58	3.20
METHYL ISOBUTYL KETONE	0.00	*00.00	0.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE	5.10	3.00	8.90	0.01	81.00	25.00
1,2-DIBROMOETHANE	0.01	0.00	0.01	0.00	0.00	0.00
TETRACHLOROETHYLENE	0.45	0.00	0.01	0.00	0.83	14.00
CHLOROBENZENE	0.34	0.01	0.54	0.01	0.46	2.70
PARA/META XYLENES	5.70	0.62	12.00	0.01	6.50	15.00
ORTHO XYLENE	1.90	0.23	2.40	0.01	1.60	2.84
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE	0.00	0.00	0.00	0.00	0.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:ELIZABETH
IN PARTS PER BILLION

COMPOUND NAME	9/24	9/30	10/ 6	10/12	10/18	10/24
VINYL CHLORIDE..........	*00.00	*00.00	0.01	0.01	0.01	0.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.01	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	*00.00	*00.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.01	*00.00	0.00
BENZENE.................	2.20	1.80	2.50	4.30	0.00	1.70
CARBON TETRACHLORIDE....	0.00	0.00	0.01	0.01	7.30	1.60
TRICHLOROETHYLENE.......	0.01	0.36	0.53	0.00	0.00	0.01
1,4-DIOXANE.............	*00.00	*00.00	*00.00	*00.00	4.50	0.52
METHYL ISOBUTYL KETONE..	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	*00.00	*00.00
TOLUENE.................	17.00	3.70	3.20	6.00	0.00	0.89
1,2-DIBROMOETHANE.......	0.15	0.01	0.01	0.00	17.00	2.00
TETRACHLOROETHYLENE.....	0.65	0.48	3.00	3.40	0.34	2.00
CHLOROBENZENE...........	0.93	0.23	0.60	0.67	13.00	0.65
PARA/META XYLENES.......	3.20	4.40	2.80	5.20	1.60	1.60
ORTHO XYLENE............	1.30	1.60	0.91	1.90	8.80	3.40
1,1,2,2TETRACHLOROETHANE	0.00	0.01	0.01	0.00	3.10	2.60
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	2.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

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                                        1979
                                   AT:ELIZABETH
                                IN PARTS PER BILLION

COMPOUND NAME                10/30    11/ 5    11/11    11/17    11/23    11/29

VINYL CHLORIDE..........      0.00     0.00     0.00   *00.00   *00.00     0.00
1,1-DICHLOROETHYLENE....      0.00     0.00     0.00   *00.00     0.00     0.00
METHYL ETHYL KETONE.....    *00.00     0.00   *00.00   *00.00   *00.00   *00.00
CHLOROFORM..............      0.00     0.00     0.00   *00.00     0.00     0.00
1,2-DICHLOROETHANE......      0.00     0.00     0.00   *00.00     0.00     0.01
BENZENE.................      2.90     2.60     1.30   *00.00    10.00     0.90
CARBON TETRACHLORIDE....      0.01     0.00     0.00   *00.00     0.00     0.00
TRICHLOROETHYLENE.......      0.20     6.40     0.00   *00.00     0.01     0.01
1,4-DIOXANE.............    *00.00     0.00   *00.00   *00.00   *00.00   *00.00
METHYL ISOBUTYL KETONE..    *00.00     0.00   *00.00   *00.00   *00.00   *00.00
1,1,2-TRICHLOROETHANE...      0.00     0.00     0.00   *00.00     0.00     9.70
TOLUENE.................      6.70     4.50     2.50   *00.00    11.00     2.80
1,2-DIBROMOETHANE.......      0.00     0.00     0.65   *00.00     0.00     0.00
TETRACHLOROETHYLENE.....      2.20     0.56     1.60   *00.00     0.01     0.01
CHLOROBENZENE...........      0.32     0.51     1.70   *00.00     0.88     0.22
PARA/META XYLENES.......      3.00     2.70     1.50   *00.00     7.60     1.20
ORTHO XYLENE............      1.10     0.69     1.10   *00.00     2.60     0.44
1,1,2,2TETRACHLOROETHANE      0.00     0.00     1.90   *00.00     0.00     0.01
NITROBENZENE............      0.00     0.00     0.00   *00.00     0.00     0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB
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1979
AT:ELIZABETH
IN PARTS PER BILLION

COMPOUND NAME	12/ 5	12/11	12/17	12/23	12/29
VINYL CHLORIDE...........	0.01	0.61	0.00	0.01	0.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.01	0.00	0.00	0.00	0.00
BENZENE.................	3.50	15.00	0.11	2.10	1.40
CARBON TETRACHLORIDE....	0.00	0.00	0.00	0.01	0.01
TRICHLOROETHYLENE.......	0.87	0.00	0.00	0.01	0.90
1,4-DIOXANE.............	*00.00	*00.00	*00.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	0.00
TOLUENE.................	8.00	1.50	0.09	3.00	2.80
1,2-DIBROMOETHANE.......	0.40	0.00	0.00	0.01	0.45
TETRACHLOROETHYLENE.....	3.60	1.10	0.00	0.01	1.00
CHLOROBENZENE...........	0.62	0.38	0.01	0.43	1.30
PARA/META XYLENES.......	3.10	1.80	0.03	1.50	4.80
ORTHO XYLENE............	1.00	0.67	0.04	0.43	2.50
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.01
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:SOUTH AMBOY
IN PARTS PER BILLION

COMPOUND NAME	1/15	1/21	1/27	2/ 2	2/ 8	2/14
VINYL CHLORIDE...........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	*00.00	*00.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	0.00	0.00	0.00	0.00
CHLOROFORM..............	*00.00	*00.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	*00.00	*00.00	0.01	0.00	0.01	0.00
BENZENE.................	*00.00	*00.00	0.66	0.93	3.80	2.30
CARBON TETRACHLORIDE....	*00.00	*00.00	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE.......	*00.00	*00.00	0.01	0.00	0.01	8.50
1,4-DIOXANE.............	*00.00	*00.00	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE..	*00.00	*00.00	0.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE...	*00.00	*00.00	0.00	0.00	0.00	0.00
TOLUENE.................	*00.00	*00.00	0.72	0.74	2.20	2.70
1,2-DIBROMOETHANE.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
TETRACHLOROETHYLENE.....	*00.00	*00.00	0.01	0.01	0.00	1.70
CHLOROBENZENE...........	*00.00	*00.00	0.05	0.01	0.93	0.70
PARA/META XYLENES.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
ORTHO XYLENE............	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	*00.00	*00.00	0.00	0.00	0.00	0.00
NITROBENZENE............	*00.00	*00.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00------BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

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                                          1979
                                     AT:SOUTH AMBOY
                                  IN PARTS PER BILLION
COMPOUND NAME
                               2/20     2/26     3/ 4     3/10     3/16     3/22

VINYL CHLORIDE...........     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,1-DICHLOROETHYLENE....       0.00     0.00   *00.00     0.00     0.00     0.00
METHYL ETHYL KETONE.....       0.00     0.00   *00.00     0.00     0.00     0.00
CHLOROFORM..............       0.00     0.00   *00.00     0.00     0.00     0.00
1,2-DICHLOROETHANE......       0.00     0.00   *00.00     0.00     0.00     0.00
BENZENE.................       0.54     7.60   *00.00     4.80     1.30     0.01
CARBON TETRACHLORIDE....       0.00     0.01   *00.00     0.00     0.00     0.00
TRICHLOROETHYLENE.......       0.01     4.40   *00.00     0.32     0.01     0.00
1,4-DIOXANE.............       0.00     0.00   *00.00     0.00     0.00     0.00
METHYL ISOBUTYL KETONE..       0.00     0.00   *00.00     0.00     0.00     0.00
1,1,2-TRICHLOROETHANE...       0.00     0.00   *00.00     0.00     0.00     0.00
TOLUENE.................       0.49     9.20   *00.00     3.70     1.40     0.01
1,2-DIBROMOETHANE.......     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
TETRACHLOROETHYLENE.....       0.08     2.20   *00.00     1.70     0.11     0.00
CHLOROBENZENE...........       0.01     3.90   *00.00     0.12     0.01     0.00
PARA/META XYLENES.......     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
ORTHO XYLENE............     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,1,2,2TETRACHLOROETHANE       0.00     0.00   *00.00     0.00     0.00     0.00
NITROBENZENE............       0.00     0.00   *00.00     0.00     0.00     0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB
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1979
AT:SOUTH AMBOY
IN PARTS PER BILLION

COMPOUND NAME	3/28	4/ 3	4/ 9	4/15	4/21	4/27
VINYL CHLORIDE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE	0.00	*00.00	0.00	*00.00	0.00	*00.00
METHYL ETHYL KETONE	0.00	*00.00	0.00	*00.00	0.00	*00.00
CHLOROFORM	0.00	*00.00	0.00	*00.00	0.00	*00.00
1,2-DICHLOROETHANE	0.00	*00.00	0.01	*00.00	0.00	*00.00
BENZENE	0.00	*00.00	2.80	*00.00	0.25	*00.00
CARBON TETRACHLORIDE	0.00	*00.00	0.00	*00.00	0.00	*00.00
TRICHLOROETHYLENE	0.00	*00.00	2.70	*00.00	0.01	*00.00
1,4-DIOXANE	0.00	*00.00	0.00	*00.00	0.00	*00.00
METHYL ISOBUTYL KETONE	0.00	0.00	0.01	*00.00	0.00	*00.00
1,1,2-TRICHLOROETHANE	0.00	*00.00	0.00	*00.00	0.00	*00.00
TOLUENE	0.00	*00.00	2.70	*00.00	0.32	*00.00
1,2-DIBROMOETHANE	0.00	*00.00	0.01	*00.00	0.00	*00.00
TETRACHLOROETHYLENE	0.00	*00.00	0.50	*00.00	0.01	*00.00
CHLOROBENZENE	0.00	*00.00	0.92	*00.00	0.01	*00.00
PARA/META XYLENES	0.00	*00.00	2.80	*00.00	0.37	*00.00
ORTHO XYLENE	0.00	*00.00	0.52	*00.00	0.06	*00.00
1,1,2,2TETRACHLOROETHANE	0.00	*00.00	0.00	*00.00	0.00	*00.00
NITROBENZENE	0.00	*00.00	0.00	*00.00	0.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:SOUTH AMBOY
IN PARTS PER BILLION

COMPOUND NAME	5/ 3	5/ 9	5/15	5/21	5/27	6/ 2
VINYL CHLORIDE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE	0.84	0.01	2.50	3.50	0.33	1.10
CARBON TETRACHLORIDE	0.00	0.00	0.00	0.00	0.01	0.00
TRICHLOROETHYLENE	0.01	0.00	0.46	0.50	0.00	0.01
1,4-DIOXANE	0.00	0.00	0.00	0.01	0.00	0.00
METHYL ISOBUTYL KETONE	0.01	0.00	0.01	0.01	0.01	0.00
1,1,2-TRICHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE	1.10	0.01	5.20	9.20	0.84	0.90
1,2-DIBROMOETHANE	0.00	0.00	0.00	0.91	0.00	0.01
TETRACHLOROETHYLENE	0.01	0.00	0.00	1.30	0.01	0.01
CHLOROBENZENE	0.01	0.00	0.19	0.62	0.18	0.01
PARA/META XYLENES	0.32	0.01	0.98	3.50	0.59	0.37
ORTHO XYLENE	0.09	0.01	0.18	1.20	0.18	0.13
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:SOUTH AMBOY
IN PARTS PER BILLION

COMPOUND NAME	6/ 8	6/14	6/20	6/26	7/ 2	7/ 8
VINYL CHLORIDE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM	0.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE	0.62	1.50	1.50	0.40	0.01	0.00
CARBON TETRACHLORIDE	0.00	0.00	0.00	0.00	0.65	1.60
TRICHLOROETHYLENE	0.01	0.24	0.61	0.00	0.00	0.00
1,4-DIOXANE	0.00	0.00	0.00	0.00	0.01	0.01
METHYL ISOBUTYL KETONE	0.00	0.01	0.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE	0.64	1.70	4.40	0.43	3.10	3.30
1,2-DIBROMOETHANE	0.00	0.36	0.00	0.01	0.00	0.01
TETRACHLOROETHYLENE	0.01	0.12	0.86	0.01	0.00	0.01
CHLOROBENZENE	0.01	0.01	0.01	0.09	0.01	0.27
PARA/META XYLENES	0.30	0.69	1.00	0.24	0.35	1.20
ORTHO XYLENE	0.10	0.65	1.00	0.18	0.10	0.66
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE	0.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:SOUTH AMBOY
IN PARTS PER BILLION

COMPOUND NAME	7/14	7/20	7/26	8/ 1	8/ 7	8/13
VINYL CHLORIDE...........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	*00.00	0.00	0.00	0.00	*00.00	0.00
METHYL ETHYL KETONE.....	*00.00	0.00	0.00	0.00	*00.00	*00.00
CHLOROFORM..............	*00.00	0.00	0.00	0.00	*00.00	0.00
1,2-DICHLOROETHANE......	*00.00	0.00	0.00	0.00	*00.00	0.00
BENZENE.................	*00.00	0.66	1.50	0.15	*00.00	0.52
CARBON TETRACHLORIDE....	*00.00	0.00	0.00	0.00	*00.00	0.00
TRICHLOROETHYLENE.......	*00.00	0.01	0.44	0.00	*00.00	0.01
1,4-DIOXANE.............	*00.00	0.00	0.00	0.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	*00.00	0.00	0.00	0.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	*00.00	0.00	0.00	0.00	*00.00	0.00
TOLUENE.................	*00.00	1.60	4.90	0.09	*00.00	1.20
1,2-DIBROMOETHANE.......	*00.00	0.00	0.00	0.00	*00.00	0.01
TETRACHLOROETHYLENE.....	*00.00	0.01	0.27	0.00	*00.00	0.01
CHLOROBENZENE...........	*00.00	0.01	0.37	0.00	*00.00	0.01
PARA/META XYLENES.......	*00.00	1.30	2.70	0.01	*00.00	0.58
ORTHO XYLENE............	*00.00	0.34	0.76	0.01	*00.00	0.01
1,1,2,2TETRACHLOROETHANE	*00.00	0.00	0.00	0.00	*00.00	0.00
NITROBENZENE............	*00.00	0.00	0.00	0.00	*00.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:SOUTH AMBOY
IN PARTS PER BILLION

COMPOUND NAME	8/19	8/25	8/31	9/ 6	9/12	9/18
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	*00.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	0.00	0.00	0.00	0.00
CHLOROFORM..............	*00.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	*00.00	0.00	0.00	0.00	0.00	0.00
BENZENE.................	*00.00	1.70	1.20	0.23	1.40	0.91
CARBON TETRACHLORIDE....	*00.00	0.00	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE.......	*00.00	0.00	0.01	0.01	0.01	0.01
1,4-DIOXANE.............	*00.00	*00.00	0.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE..	*00.00	*00.00	0.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE...	*00.00	0.00	0.00	0.00	0.00	0.00
TOLUENE.................	*00.00	3.10	2.50	4.10	4.40	3.30
1,2-DIBROMOETHANE.......	*00.00	0.00	0.01	0.01	0.00	0.01
TETRACHLOROETHYLENE.....	*00.00	0.01	0.01	0.01	0.01	0.01
CHLOROBENZENE...........	*00.00	0.30	0.18	0.12	0.01	0.01
PARA/META XYLENES.......	*00.00	2.10	1.70	2.30	1.40	1.20
ORTHO XYLENE............	*00.00	0.64	0.48	0.47	0.35	0.32
1,1,2,2TETRACHLOROETHANE	*00.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE............	*00.00	0.00	0.00	0.00	0.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:SOUTH AMBOY
IN PARTS PER BILLION

COMPOUND NAME	9/24	9/30	10/ 6	10/12	10/18	10/24
VINYL CHLORIDE..........	*00.00	0.01	0.00	*00.00	*00.00	0.01
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00	0.00
CHLOROFORM..............	0.00	0.00	0.00	*00.00	*00.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	0.00	0.00	*00.00	0.00
BENZENE.................	0.85	0.60	0.00	0.00	0.00	0.00
CARBON TETRACHLORIDE....	0.00	0.00	0.15	0.42	*00.00	0.00
TRICHLOROETHYLENE.......	0.89	0.01	0.00	0.00	*00.00	0.00
1,4-DIOXANE.............	*00.00	*00.00	0.01	0.00	*00.00	0.00
METHYL ISOBUTYL KETONE..	*00.00	*00.00	*00.00	*00.00	*00.00	0.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	*00.00	*00.00	*00.00	0.00
TOLUENE.................	1.90	0.84	0.00	0.00	*00.00	0.00
1,2-DIBROMOETHANE.......	1.30	0.10	0.14	0.92	*00.00	0.01
TETRACHLOROETHYLENE.....	0.01	0.01	0.00	0.00	*00.00	0.00
CHLOROBENZENE...........	1.20	0.57	0.00	1.42	*00.00	0.00
PARA/META XYLENES.......	2.50	0.66	0.14	0.48	*00.00	0.00
ORTHO XYLENE............	1.80	0.32	0.13	0.62	*00.00	0.00
1,1,2,2TETRACHLOROETHANE	0.00	0.01	0.14	0.40	*00.00	0.00
NITROBENZENE............	0.00	0.00	0.00	0.00	*00.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:SOUTH AMBOY
IN PARTS PER BILLION

COMPOUND NAME	10/30	11/ 5	11/11	11/17	11/23	11/29
VINYL CHLORIDE..........	0.00	*00.00	0.00	0.01	0.00	0.00
1,1-DICHLOROETHYLENE....	0.00	*00.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.00	*00.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	*00.00	0.00	0.00	0.00	0.00
BENZENE.................	0.75	*00.00	2.90	0.00	0.01	0.00
CARBON TETRACHLORIDE....	0.01	*00.00	0.01	0.00	0.00	0.00
TRICHLOROETHYLENE.......	0.00	*00.00	0.01	0.00	0.00	0.00
1,4-DIOXANE.............	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	*00.00	0.00	0.00	0.00	0.00
TOLUENE.................	2.10	*00.00	8.20	0.15	0.35	0.00
1,2-DIBROMOETHANE.......	0.00	*00.00	0.00	0.00	0.00	0.00
TETRACHLOROETHYLENE.....	0.01	*00.00	0.01	0.00	0.00	0.00
CHLOROBENZENE...........	0.00	*00.00	0.69	0.00	0.00	0.00
PARA/META XYLENES.......	0.77	*00.00	10.00	0.00	0.00	0.00
ORTHO XYLENE............	0.26	*00.00	4.30	0.00	0.55	0.00
1,1,2,2TETRACHLOROETHANE	0.00	*00.00	0.00	0.00	0.36	0.00
NITROBENZENE............	0.00	*00.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:SOUTH AMBOY
IN PARTS PER BILLION

COMPOUND NAME	12/ 5	12/11	12/17	12/23	12/29
VINYL CHLORIDE	0.01	0.00	0.00	0.17	0.00
1,1-DICHLOROETHYLENE	0.01	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE	0.00	0.00	0.00	0.00	0.00
BENZENE	1.00	1.00	0.00	0.00	0.00
CARBON TETRACHLORIDE	0.00	0.00	0.10	0.64	0.84
TRICHLOROETHYLENE	0.00	0.00	0.00	0.01	0.00
1,4-DIOXANE	*00.00	0.00	0.00	0.01	0.01
METHYL ISOBUTYL KETONE	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE	0.00	*00.00	*00.00	*00.00	*00.00
TOLUENE	2.70	0.00	0.00	0.00	0.00
1,2-DIBROMOETHANE	0.00	1.10	0.01	1.60	1.80
TETRACHLOROETHYLENE	0.01	0.00	0.00	0.00	0.00
CHLOROBENZENE	0.09	0.01	0.00	0.01	0.00
PARA/META XYLENES	1.10	0.00	0.00	0.10	0.04
ORTHO XYLENE	0.38	0.39	0.03	0.44	0.57
1,1,2,2TETRACHLOROETHANE	0.00	0.14	0.01	0.17	0.27
NITROBENZENE	0.00	0.00	0.00	0.01	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

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                                 1979
                               AT:CAMDEN
                          IN PARTS PER BILLION
COMPOUND NAME                 1/15     1/21     1/27     2/ 2     2/ 8     2/14

VINYL CHLORIDE..........    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,1-DICHLOROETHYLENE....    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
METHYL ETHYL KETONE.....    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
CHLOROFORM..............    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,2-DICHLOROETHANE......    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
BENZENE.................    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
CARBON TETRACHLORIDE....    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
TRICHLOROETHYLENE.......    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,4-DIOXANE.............    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
METHYL ISOBUTYL KETONE..    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,1,2-TRICHLOROETHANE...    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
TOLUENE.................    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,2-DIBROMOETHANE.......    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
TETRACHLOROETHYLENE.....    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
CHLOROBENZENE...........    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
PARA/META XYLENES.......    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
ORTHO XYLENE............    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,1,2,2TETRACHLOROETHANE    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
NITROBENZENE............    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB
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                                         1979
                                       AT:CAMDEN
                                   IN PARTS PER BILLION
COMPOUND NAME
                              2/20     2/26     3/ 4     3/10     3/16     3/22

VINYL CHLORIDE..........     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,1-DICHLOROETHYLENE....     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
METHYL ETHYL KETONE.....     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
CHLOROFORM..............     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,2-DICHLOROETHANE......     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
BENZENE.................     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
CARBON TETRACHLORIDE....     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
TRICHLOROETHYLENE.......     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,4-DIOXANE.............     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
METHYL ISOBUTYL KETONE..     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,1,2-TRICHLOROETHANE...     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
TOLUENE.................     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,2-DIBROMOETHANE.......     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
TETRACHLOROETHYLENE.....     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
CHLOROBENZENE...........     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
PARA/META XYLENES.......     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
ORTHO XYLENE............     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,1,2,2TETRACHLOROETHANE     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
NITROBENZENE............     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB
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1979
AT:CAMDEN
IN PARTS PER BILLION

COMPOUND NAME	3/28	4/ 3	4/ 9	4/15	4/21	4/27
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	*00.00	0.00	*00.00	*00.00	*00.00	*00.00
METHYL ETHYL KETONE.....	*00.00	0.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	*00.00	0.01	*00.00	*00.00	*00.00	*00.00
1,2-DICHLOROETHANE......	*00.00	0.00	*00.00	*00.00	*00.00	*00.00
BENZENE.................	*00.00	0.16	*00.00	*00.00	*00.00	*00.00
CARBON TETRACHLORIDE....	*00.00	0.00	*00.00	*00.00	*00.00	*00.00
TRICHLOROETHYLENE.......	*00.00	0.05	*00.00	*00.00	*00.00	*00.00
1,4-DIOXANE.............	*00.00	0.00	*00.00	*00.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	*00.00	0.00	*00.00	*00.00	*00.00	*00.00
TOLUENE.................	*00.00	0.22	*00.00	*00.00	*00.00	*00.00
1,2-DIBROMOETHANE.......	*00.00	0.01	*00.00	*00.00	*00.00	*00.00
TETRACHLOROETHYLENE.....	*00.00	0.02	*00.00	*00.00	*00.00	*00.00
CHLOROBENZENE...........	*00.00	1.20	*00.00	*00.00	*00.00	*00.00
PARA/META XYLENES.......	*00.00	0.15	*00.00	*00.00	*00.00	*00.00
ORTHO XYLENE............	*00.00	0.05	*00.00	*00.00	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	*00.00	0.00	*00.00	*00.00	*00.00	*00.00
NITROBENZENE............	*00.00	0.00	*00.00	*00.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

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                                    1979
                                  AT:CAMDEN
                             IN PARTS PER BILLION

COMPOUND NAME                  5/ 3     5/ 9     5/15     5/21     5/27     6/ 2

VINYL CHLORIDE...........     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,1-DICHLOROETHYLENE....      *00.00   *00.00     0.00     0.00     0.00     0.00
METHYL ETHYL KETONE.....      *00.00   *00.00     0.00     0.00     0.00     0.00
CHLOROFORM..............      *00.00   *00.00     0.00     0.00     0.00     0.00
1,2-DICHLOROETHANE......      *00.00   *00.00     0.00     0.00     0.00     0.00
BENZENE.................      *00.00   *00.00     7.00     1.80     1.00     1.90
CARBON TETRACHLORIDE....      *00.00   *00.00     0.00     0.00     0.00     0.00
TRICHLOROETHYLENE.......      *00.00   *00.00     1.00     0.01     0.16     0.01
1,4-DIOXANE.............      *00.00   *00.00     0.00     0.00     0.00     0.00
METHYL ISOBUTYL KETONE..      *00.00   *00.00     0.00     0.00     0.00     0.00
1,1,2-TRICHLOROETHANE...      *00.00   *00.00     0.00     0.00     0.00     0.00
TOLUENE.................      *00.00   *00.00     0.00     0.00     0.00     0.00
1,2-DIBROMOETHANE.......      *00.00   *00.00     6.40     4.20     0.39     1.10
TETRACHLOROETHYLENE.....      *00.00   *00.00     0.00     0.01     0.01     0.00
CHLOROBENZENE...........      *00.00   *00.00     1.30     0.01     0.01     0.01
PARA/META XYLENES.......      *00.00   *00.00     2.90     1.20     0.05     0.34
ORTHO XYLENE............      *00.00   *00.00     3.00     3.00     1.30     0.63
1,1,2,2TETRACHLOROETHANE      *00.00   *00.00     5.60     1.30     0.25     0.59
NITROBENZENE............      *00.00   *00.00     0.00     0.00     0.00     0.00
                                                  0.00     0.00     0.00     0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB
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                                         1979
                                      AT:CAMDEN
                                IN PARTS PER BILLION
COMPOUND NAME
                              6/ 8     6/14     6/20     6/26     7/ 2     7/ 8

VINYL CHLORIDE..........     *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
1,1-DICHLOROETHYLENE....     *00.00     0.00     0.00     0.00     0.00     0.00
METHYL ETHYL KETONE.....     *00.00     0.00     0.00     0.00     0.00     0.00
CHLOROFORM..............     *00.00     0.00     0.00     0.00     0.00     0.00
1,2-DICHLOROETHANE......     *00.00     0.00     0.00     0.00     0.01     0.00
BENZENE.................     *00.00     2.30     3.00     1.00     1.50     0.63
CARBON TETRACHLORIDE....     *00.00     0.00     0.00     0.00     0.01     0.00
TRICHLOROETHYLENE.......     *00.00     0.24     1.10     0.24     0.65     0.01
1,4-DIOXANE.............     *00.00     0.00     0.00     0.00     0.00     0.00
METHYL ISOBUTYL KETONE..     *00.00     0.01     0.00     0.01     0.00     0.00
1,1,2-TRICHLOROETHANE...     *00.00     0.00     0.00     0.00     0.00     0.00
TOLUENE.................     *00.00     2.10     5.40     3.10     6.70     2.70
1,2-DIBROMOETHANE.......     *00.00     0.36     4.60     0.72     0.00     0.00
TETRACHLOROETHYLENE.....     *00.00     0.18     0.71     0.28     2.60     0.01
CHLOROBENZENE...........     *00.00     0.40     0.95     0.49     1.60     1.90
PARA/META XYLENES.......     *00.00     0.82     4.00     2.30     5.60     2.60
ORTHO XYLENE............     *00.00     0.36     1.30     0.83     1.97     0.53
1,1,2,2TETRACHLOROETHANE     *00.00     0.00     0.00     0.00     0.00     0.00
NITROBENZENE............     *00.00     0.00     0.00     0.00     0.00     0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB
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1979
AT:CAMDEN
IN PARTS PER BILLION

COMPOUND NAME	7/14	7/20	7/26	8/ 1	8/ 7	8/13
VINYL CHLORIDE...........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	*00.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	0.00	0.00	0.00	*00.00	*00.00
CHLOROFORM...............	*00.00	0.00	0.00	0.00	0.00	0.00
1,2-DICHLOROETHANE.......	*00.00	0.00	0.01	0.00	0.00	0.00
BENZENE..................	*00.00	1.60	1.35	0.47	0.98	0.17
CARBON TETRACHLORIDE....	*00.00	0.01	0.00	0.00	0.00	0.00
TRICHLOROETHYLENE.......	*00.00	0.01	0.00	0.01	0.35	0.01
1,4-DIOXANE..............	*00.00	0.00	0.00	0.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	*00.00	0.00	0.00	0.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	*00.00	0.00	0.00	0.00	0.00	0.00
TOLUENE..................	*00.00	2.90	8.20	3.80	5.30	5.20
1,2-DIBROMOETHANE.......	*00.00	0.00	0.00	0.00	0.00	0.00
TETRACHLOROETHYLENE.....	*00.00	0.01	0.01	0.00	0.00	0.01
CHLOROBENZENE...........	*00.00	0.01	0.97	0.48	0.51	0.59
PARA/META XYLENES.......	*00.00	2.20	6.80	4.50	4.00	8.20
ORTHO XYLENE............	*00.00	0.53	1.70	1.20	1.10	2.00
1,1,2,2TETRACHLOROETHANE	*00.00	0.00	0.00	0.00	0.00	0.00
NITROBENZENE............	*00.00	0.00	0.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:CAMDEN
IN PARTS PER BILLION

COMPOUND NAME	8/19	8/25	8/31	9/ 6	9/12	9/18
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	*00.00	0.00	*00.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	0.00	0.00	0.00
CHLOROFORM..............	*00.00	0.00	*00.00	0.00	0.00	0.00
1,2-DICHLOROETHANE......	*00.00	0.00	*00.00	0.00	0.00	0.00
BENZENE.................	*00.00	0.90	*00.00	0.70	0.57	2.00
CARBON TETRACHLORIDE....	*00.00	0.00	*00.00	0.00	0.00	0.00
TRICHLOROETHYLENE.......	*00.00	0.01	*00.00	0.01	0.01	0.01
1,4-DIOXANE.............	*00.00	*00.00	*00.00	0.00	0.00	0.00
METHYL ISOBUTYL KETONE..	*00.00	*00.00	*00.00	0.00	0.00	0.00
1,1,2-TRICHLOROETHANE...	*00.00	0.00	*00.00	0.00	0.00	0.00
TOLUENE.................	*00.00	1.70	*00.00	20.00	8.90	8.40
1,2-DIBROMOETHANE.......	*00.00	0.01	*00.00	0.01	0.00	0.00
TETRACHLOROETHYLENE.....	*00.00	0.01	*00.00	0.01	0.00	0.00
CHLOROBENZENE...........	*00.00	0.31	*00.00	1.30	0.43	0.83
PARA/META XYLENES.......	*00.00	1.20	*00.00	19.00	10.00	7.10
ORTHO XYLENE............	*00.00	0.43	*00.00	4.30	2.20	1.20
1,1,2,2TETRACHLOROETHANE	*00.00	0.00	*00.00	0.00	0.00	0.00
NITROBENZENE............	*00.00	0.00	*00.00	0.00	0.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1979
AT:CAMDEN
IN PARTS PER BILLION

COMPOUND NAME	9/24	9/30	10/ 6	10/12	10/18	10/24
VINYL CHLORIDE..........	0.01	0.01	*00.00	*00.00	0.64	0.00
1,1-DICHLOROETHYLENE....	0.00	0.00	*00.00	*00.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.00	0.00	*00.00	*00.00	0.00	0.00
1,2-DICHLOROETHANE......	0.00	0.00	*00.00	*00.00	0.00	0.00
BENZENE.................	0.47	1.40	*00.00	*00.00	3.00	0.63
CARBON TETRACHLORIDE....	0.00	0.00	*00.00	*00.00	0.01	0.00
TRICHLOROETHYLENE.......	0.01	3.50	*00.00	*00.00	2.40	0.01
1,4-DIOXANE.............	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	*00.00	*00.00	0.00	0.00
TOLUENE.................	7.10	7.60	*00.00	*00.00	36.00	4.90
1,2-DIBROMOETHANE.......	0.23	0.40	*00.00	*00.00	1.50	0.01
TETRACHLOROETHYLENE.....	0.15	4.10	*00.00	*00.00	30.00	1.10
CHLOROBENZENE...........	0.46	0.30	*00.00	*00.00	1.40	0.37
PARA/META XYLENES.......	4.10	9.40	*00.00	*00.00	35.00	2.90
ORTHO XYLENE............	1.20	3.20	*00.00	*00.00	15.00	0.96
1,1,2,2TETRACHLOROETHANE	0.00	0.01	*00.00	*00.00	0.01	0.00
NITROBENZENE............	0.00	0.00	*00.00	*00.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

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                                      1979
                                    AT:CAMDEN
                              IN PARTS PER BILLION
COMPOUND NAME
                               10/30     11/ 5     11/11     11/17     11/23     11/29
VINYL CHLORIDE..........      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
1,1-DICHLOROETHYLENE....      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
METHYL ETHYL KETONE.....      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
CHLOROFORM..............      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
1,2-DICHLOROETHANE......      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
BENZENE.................      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
CARBON TETRACHLORIDE....      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
TRICHLOROETHYLENE.......      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
1,4-DIOXANE.............      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
METHYL ISOBUTYL KETONE..      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
1,1,2-TRICHLOROETHANE...      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
TOLUENE.................      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
1,2-DIBROMOETHANE.......      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
TETRACHLOROETHYLENE.....      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
CHLOROBENZENE...........      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
PARA/META XYLENES.......      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
ORTHO XYLENE............      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
1,1,2,2TETRACHLOROETHANE      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00
NITROBENZENE............      *00.00    *00.00    *00.00    *00.00    *00.00    *00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB
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1979
AT:CAMDEN
IN PARTS PER BILLION

COMPOUND NAME	12/ 5	12/11	12/17	12/23	12/29
VINYL CHLORIDE...........	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	*00.00	*00.00	*00.00	*00.00	*00.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	*00.00	*00.00	*00.00	*00.00	*00.00
1,2-DICHLOROETHANE......	*00.00	*00.00	*00.00	*00.00	*00.00
BENZENE.................	*00.00	*00.00	*00.00	*00.00	*00.00
CARBON TETRACHLORIDE....	*00.00	*00.00	*00.00	*00.00	*00.00
TRICHLOROETHYLENE.......	*00.00	*00.00	*00.00	*00.00	*00.00
1,4-DIOXANE.............	*00.00	*00.00	*00.00	*00.00	*00.00
METHYL ISOBUTYL KETONE..	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	*00.00	*00.00	*00.00	*00.00	*00.00
TOLUENE.................	*00.00	*00.00	*00.00	*00.00	*00.00
1,2-DIBROMOETHANE.......	*00.00	*00.00	*00.00	*00.00	*00.00
TETRACHLOROETHYLENE.....	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROBENZENE...........	*00.00	*00.00	*00.00	*00.00	*00.00
PARA/META XYLENES.......	*00.00	*00.00	*00.00	*00.00	*00.00
ORTHO XYLENE............	*00.00	*00.00	*00.00	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	*00.00	*00.00	*00.00	*00.00	*00.00
NITROBENZENE............	*00.00	*00.00	*00.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	1/ 4	1/10	1/16	1/21	1/28	2/ 3
VINYL CHLORIDE..........	0.00	0.00	*00.00	0.00	*00.00	0.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM..............	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE.................	5.40	0.00	0.01	0.00	0.00	0.00
CARBON TETRACHLORIDE....	0.00	0.00	3.40	4.00	1.20	1.50
TRICHLOROETHYLENE.......	1.00	0.00	0.00	0.01	0.00	0.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	3.00	4.30	0.01	0.01
TOLUENE.................	11.00	0.00	0.00	0.01	0.01	0.00
1,2-DIBROMOETHANE.......	1.30	0.00	7.40	11.50	1.60	1.50
TETRACHLOROETHYLENE.....	3.70	0.00	0.00	2.80	0.00	0.00
CHLOROBENZENE...........	1.00	0.00	2.10	2.30	0.39	0.39
ETHYL BENZENE...........	0.91	0.00	0.21	2.20	0.01	0.00
PARA/META XYLENES	3.20	0.00	0.83	2.80	0.06	0.05
ORTHO XYLENE	1.40	0.00	2.20	1.70	0.21	0.19
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.67	2.10	0.10	0.05
NITROBENZENE............	0.00	0.00	0.00	0.01	0.00	0.00
STYRENE.................	0.00	0.00	0.00	0.00	0.00	0.00
O-CHLOROTOLUENE.........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
P-CHLOROTOLUENE.........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
P-DICHLOROBENZENE.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
O-DICHLOROBENZENE.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	2/ 9	2/15	2/21	2/27	3/ 4	3/10
VINYL CHLORIDE..........	0.00	0.00	0.00	0.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	*00.00
METHYL ETHYL KETONE.....	0.00	0.00	0.00	0.00	0.00	*00.00
CHLOROFORM..............	0.00	0.01	0.01	0.00	0.00	*00.00
BENZENE.................	0.35	3.90	5.20	1.50	0.01	*00.00
CARBON TETRACHLORIDE....	0.01	0.01	0.01	0.00	3.80	*00.00
TRICHLOROETHYLENE.......	0.22	0.91	1.30	0.01	0.01	*00.00
1,1,2-TRICHLOROETHANE...	0.01	0.00	0.00	0.00	0.58	*00.00
TOLUENE.................	0.34	10.00	16.00	1.00	0.01	*00.00
1,2-DIBROMOETHANE.......	0.23	0.00	0.00	0.00	5.60	*00.00
TETRACHLOROETHYLENE.....	0.20	2.80	3.30	*00.00	0.00	*00.00
CHLOROBENZENE...........	0.29	0.28	0.46	*00.00	2.50	*00.00
ETHYL BENZENE...........	0.21	1.00	1.90	*00.00	0.28	*00.00
PARA/META XYLENES	0.20	3.20	5.40	*00.00	0.73	*00.00
ORTHO XYLENE	0.19	1.10	1.40	*00.00	9.00	*00.00
1,1,2,2TETRACHLOROETHANE	0.01	0.00	0.00	*00.00	0.39	*00.00
NITROBENZENE............	0.00	0.00	0.00	*00.00	0.00	*00.00
STYRENE.................	*00.00	*00.00	*00.00	*00.00	0.00	*00.00
O-CHLOROTOLUENE.........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
P-CHLOROTOLUENE.........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
P-DICHLOROBENZENE.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
O-DICHLOROBENZENE.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	3/16	3/22	3/28	4/ 3	4/ 9	4/15
VINYL CHLORIDE...........	0.00	*00.00	0.00	0.01	0.00	0.00
1,1-DICHLOROETHYLENE....	0.00	*00.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	*00.00	0.00	0.00	0.00	0.00
CHLOROFORM..............	0.01	*00.00	0.01	0.00	0.01	0.00
BENZENE.................	2.30	*00.00	5.60	3.70	0.18	1.30
CARBON TETRACHLORIDE....	0.01	*00.00	0.01	0.01	0.01	0.02
TRICHLOROETHYLENE.......	2.90	*00.00	0.67	0.01	0.01	0.24
1,1,2-TRICHLOROETHANE...	0.01	*00.00	0.00	0.00	0.01	0.00
TOLUENE.................	4.30	*00.00	1.10	2.90	0.18	1.90
1,2-DIBROMOETHANE.......	1.20	*00.00	0.00	0.01	0.01	0.00
TETRACHLOROETHYLENE.....	2.60	*00.00	2.00	11.00	0.01	0.52
CHLOROBENZENE...........	0.61	*00.00	0.94	1.30	0.07	0.08
ETHYL BENZENE...........	1.50	*00.00	0.71	0.95	0.08	0.16
PARA/META XYLENES	2.10	*00.00	0.45	1.40	0.10	0.43
ORTHO XYLENE	0.55	*00.00	0.50	2.00	0.06	0.14
1,1,2,2TETRACHLOROETHANE	0.00	*00.00	0.00	0.01	0.01	0.00
NITROBENZENE............	0.00	*00.00	0.00	0.00	0.00	0.00
STYRENE.................	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
O-CHLOROTOLUENE.........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
P-CHLOROTOLUENE.........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
P-DICHLOROBENZENE.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
O-DICHLOROBENZENE.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	4/21	4/27	5/ 3	5/ 9	5/15	5/21
VINYL CHLORIDE	0.00	0.00	0.00	0.00	0.00	0.01
1,1-DICHLOROETHYLENE	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE	0.00	0.00	0.00	0.00	0.00	0.00
CHLOROFORM	0.08	0.05	0.00	0.00	0.00	*00.00
BENZENE	1.30	3.80	0.00	0.44	0.12	0.00
CARBON TETRACHLORIDE	0.03	0.04	1.10	4.10	0.58	2.60
TRICHLOROETHYLENE	0.60	0.24	0.02	0.15	0.12	0.04
1,1,2-TRICHLOROETHANE	0.00	0.00	0.23	0.81	0.29	0.45
TOLUENE	3.80	3.40	0.00	0.00	0.00	0.00
1, 2-DIBROMOETHANE	0.00	0.01	11.00	26.00	2.00	6.90
TETRACHLOROETHYLENE	0.57	0.81	0.00	0.02	0.16	0.10
CHLOROBENZENE	0.13	0.14	0.69	0.22	0.54	1.80
ETHYL BENZENE	0.31	0.55	0.38	0.24	0.11	0.44
PARA/META XYLENES	0.78	2.60	0.70	0.98	0.34	1.10
ORTHO XYLENE	0.24	0.37	1.20	2.50	0.79	1.90
1,1,2,2TETRACHLOROETHANE	0.00	0.01	0.43	0.54	0.29	0.73
NITROBENZENE	0.00	0.00	0.12	0.00	0.23	0.15
STYRENE	*00.00	0.00	0.00	0.00	0.00	0.00
O-CHLOROTOLUENE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
P-CHLOROTOLUENE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
P-DICHLOROBENZENE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
O-DICHLOROBENZENE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	5/27	6/ 2	6/ 8	6/14	6/20	6/26
VINYL CHLORIDE..........	0.00	0.01	*00.00	*00.00	0.01	0.00
1,1-DICHLOROETHYLENE....	0.00	0.00	*00.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.03	0.00	*00.00	0.35	6.00	0.07
BENZENE.................	1.40	1.90	*00.00	4.50	5.80	2.60
CARBON TETRACHLORIDE....	0.10	0.00	*00.00	0.41	1.30	0.19
TRICHLOROETHYLENE.......	0.32	0.58	*00.00	0.86	3.00	0.93
1,1,2-TRICHLOROETHANE...	0.00	0.00	*00.00	0.53	0.74	0.00
TOLUENE.................	4.00	3.70	*00.00	15.00	170.00	11.00
1,2-DIBROMOETHANE.......	0.00	0.00	*00.00	0.04	0.10	0.01
TETRACHLOROETHYLENE.....	0.65	0.50	*00.00	2.80	4.40	1.60
CHLOROBENZENE...........	0.06	0.09	*00.00	0.49	4.60	0.29
ETHYL BENZENE...........	0.20	0.14	*00.00	6.10	3.70	0.72
PARA/META XYLENES	0.76	0.56	*00.00	20.00	14.00	2.40
ORTHO XYLENE	0.18	0.15	*00.00	3.50	14.00	0.63
1,1,2,2TETRACHLOROETHANE	0.00	0.00	*00.00	0.04	0.12	0.01
NITROBENZENE............	0.00	0.00	*00.00	0.00	0.00	0.00
STYRENE.................	0.04	0.06	*00.00	0.24	1.70	0.11
O-CHLOROTOLUENE.........	0.00	0.00	*00.00	0.30	*00.00	0.12
P-CHLOROTOLUENE.........	0.00	0.00	*00.00	0.34	*00.00	0.14
P-DICHLOROBENZENE.......	0.00	0.00	*00.00	0.00	0.00	0.00
O-DICHLOROBENZENE.......	0.00	0.00	*00.00	0.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	7/ 2	7/ 8	7/14	7/20	7/26	8/ 1
VINYL CHLORIDE..........	0.00	0.00	*00.00	0.00	0.00	0.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	*00.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.01	0.35	0.31	*00.00	0.73	0.06
BENZENE.................	3.00	1.40	2.30	*00.00	1.30	1.10
CARBON TETRACHLORIDE....	0.01	0.17	0.16	*00.00	0.02	0.09
TRICHLOROETHYLENE.......	1.40	0.35	0.64	*00.00	0.13	0.01
1,1,2-TRICHLOROETHANE...	0.00	0.90	1.30	*00.00	0.01	0.01
TOLUENE.................	8.40	4.60	9.60	*00.00	4.40	6.80
1,2-DIBROMOETHANE.......	0.00	0.02	0.23	*00.00	0.01	0.01
TETRACHLOROETHYLENE.....	2.70	0.86	1.50	*00.00	0.28	1.10
CHLOROBENZENE...........	0.63	0.10	0.54	*00.00	0.02	0.11
ETHYL BENZENE...........	0.82	0.41	1.30	*00.00	0.28	0.91
PARA/META XYLENES	2.50	1.40	3.50	*00.00	0.73	2.90
ORTHO XYLENE	0.82	0.60	1.30	*00.00	0.20	0.88
1,1,2,2TETRACHLOROETHANE	0.00	0.01	0.13	*00.00	0.01	0.01
NITROBENZENE............	0.00	0.00	0.00	*00.00	1.40	1.00
STYRENE.................	0.19	0.22	0.37	*00.00	0.13	0.53
O-CHLOROTOLUENE.........	0.14	0.06	0.00	*00.00	0.03	0.00
P-CHLOROTOLUENE.........	0.20	0.01	0.00	*00.00	0.02	0.00
P-DICHLOROBENZENE.......	0.00	0.00	0.00	*00.00	0.00	0.00
O-DICHLOROBENZENE.......	0.00	0.00	0.00	*00.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	8/ 7	8/13	8/19	8/25	8/31	9/ 6
VINYL CHLORIDE..........	0.01	0.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	*00.00	0.00	0.00	*00.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.05	0.02	*00.00	0.24	*00.00	*00.00
BENZENE.................	1.40	0.89	*00.00	4.61	0.87	*00.00
CARBON TETRACHLORIDE....	0.01	0.01	*00.00	0.30	0.09	*00.00
TRICHLOROETHYLENE.......	0.61	0.31	*00.00	0.01	0.10	*00.00
1,1,2-TRICHLOROETHANE...	0.01	0.01	*00.00	0.00	0.00	*00.00
TOLUENE.................	7.90	2.80	*00.00	12.60	2.80	*00.00
1,2-DIBROMOETHANE.......	0.03	0.01	*00.00	0.00	0.00	*00.00
TETRACHLOROETHYLENE.....	0.80	0.69	*00.00	1.80	0.01	*00.00
CHLOROBENZENE...........	0.12	0.01	*00.00	0.00	0.00	*00.00
ETHYL BENZENE...........	0.49	0.17	*00.00	0.94	0.18	*00.00
PARA/META XYLENES	1.60	0.51	*00.00	2.69	0.58	*00.00
ORTHO XYLENE	0.45	0.13	*00.00	0.73	0.18	*00.00
1,1,2,2TETRACHLOROETHANE	1.60	0.39	*00.00	0.00	0.00	*00.00
NITROBENZENE............	6.90	0.07	*00.00	*00.00	*00.00	*00.00
STYRENE.................	0.30	0.08	*00.00	0.20	0.01	*00.00
O-CHLOROTOLUENE.........	0.00	0.03	*00.00	0.01	*00.00	*00.00
P-CHLOROTOLUENE.........	0.00	0.03	*00.00	0.12	*00.00	*00.00
P-DICHLOROBENZENE.......	0.00	0.02	*00.00	*00.00	*00.00	*00.00
O-DICHLOROBENZENE.......	0.00	0.01	*00.00	0.01	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	9/12	9/18	9/24	9/30	10/ 6	10/12
VINYL CHLORIDE..........	27.94	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	*00.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	1.50	1.62	1.10	1.50	1.20	*00.00
BENZENE.................	4.06	2.73	3.10	5.95	3.50	*00.00
CARBON TETRACHLORIDE....	0.00	0.00	0.00	0.00	0.00	*00.00
TRICHLOROETHYLENE.......	3.50	1.33	0.60	1.80	0.90	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	0.00	0.00	*00.00
TOLUENE.................	11.80	10.70	7.90	13.50	11.25	*00.00
1,2-DIBROMOETHANE.......	0.00	0.00	0.00	0.00	0.00	*00.00
TETRACHLOROETHYLENE.....	1.30	1.07	0.86	*00.00	1.25	*00.00
CHLOROBENZENE...........	0.00	0.05	0.19	0.19	0.04	*00.00
ETHYL BENZENE...........	1.26	0.85	0.67	1.25	1.10	*00.00
PARA/META XYLENES	3.76	2.64	2.37	4.00	3.50	*00.00
ORTHO XYLENE	1.11	0.76	0.85	1.40	1.00	*00.00
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	0.00	0.00	*00.00
NITROBENZENE............	0.20	0.29	0.28	0.11	0.01	*00.00
STYRENE.................	0.21	0.12	1.30	0.20	0.45	*00.00
O-CHLOROTOLUENE.........	0.13	0.07	0.15	0.11	0.02	*00.00
P-CHLOROTOLUENE.........	0.39	0.22	0.06	0.38	0.45	*00.00
P-DICHLOROBENZENE.......	0.06	0.08	0.22	0.08	0.01	*00.00
O-DICHLOROBENZENE.......	0.20	0.06	0.11	0.04	0.01	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	10/18	10/24	10/30	11/ 5	11/11	11/17
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	*00.00	*00.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.34	0.50	*00.00	*00.00	0.17	0.00
BENZENE.................	2.07	1.50	*00.00	*00.00	7.64	3.72
CARBON TETRACHLORIDE....	0.00	0.00	*00.00	*00.00	0.07	0.05
TRICHLOROETHYLENE.......	0.30	0.13	*00.00	*00.00	0.00	0.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	*00.00	*00.00	0.00	0.00
TOLUENE.................	4.35	4.10	*00.00	*00.00	1.79	8.43
1,2-DIBROMOETHANE.......	0.00	0.00	*00.00	*00.00	0.00	0.10
TETRACHLOROETHYLENE.....	0.28	0.70	*00.00	*00.00	0.17	1.34
CHLOROBENZENE...........	0.10	0.05	*00.00	*00.00	0.02	0.21
ETHYL BENZENE...........	0.31	0.55	*00.00	*00.00	0.17	0.85
PARA/META XYLENES	1.21	1.90	*00.00	*00.00	0.58	2.62
ORTHO XYLENE	0.34	0.50	*00.00	*00.00	0.19	0.81
1,1,2,2TETRACHLOROETHANE	0.00	0.00	*00.00	*00.00	0.00	0.09
NITROBENZENE............	0.04	0.01	*00.00	*00.00	0.00	0.06
STYRENE.................	0.02	0.16	*00.00	*00.00	0.64	0.32
O-CHLOROTOLUENE.........	0.02	0.50	*00.00	*00.00	0.08	0.00
P-CHLOROTOLUENE.........	0.24	0.22	*00.00	*00.00	0.00	0.07
P-DICHLOROBENZENE.......	0.07	0.01	*00.00	*00.00	0.01	0.15
O-DICHLOROBENZENE.......	0.02	0.01	*00.00	*00.00	0.00	0.04

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:RUTHERFORD
IN PARTS PER BILLION

COMPOUND NAME	11/23	11/29	12/ 5	12/11	12/17	12/23
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	0.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	*00.00	0.00	*00.00	*00.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	1.43	0.28	*00.00	1.00	*00.00	*00.00
BENZENE.................	6.40	1.40	*00.00	1.50	*00.00	*00.00
CARBON TETRACHLORIDE....	0.04	0.04	*00.00	*00.00	*00.00	*00.00
TRICHLOROETHYLENE.......	0.00	0.00	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	*00.00	0.00	*00.00	*00.00
TOLUENE.................	17.00	1.63	*00.00	4.50	*00.00	*00.00
1,2-DIBROMOETHANE.......	0.00	0.00	*00.00	0.00	*00.00	*00.00
TETRACHLOROETHYLENE.....	2.05	0.06	*00.00	0.33	*00.00	*00.00
CHLOROBENZENE...........	0.51	0.03	*00.00	0.00	*00.00	*00.00
ETHYL BENZENE...........	1.84	1.41	*00.00	0.39	*00.00	*00.00
PARA/META XYLENES	5.47	0.52	*00.00	1.30	*00.00	*00.00
ORTHO XYLENE	1.68	0.16	*00.00	0.50	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	0.00	0.00	*00.00	0.00	*00.00	*00.00
NITROBENZENE............	0.08	0.00	*00.00	0.00	*00.00	*00.00
STYRENE.................	0.49	0.03	*00.00	0.10	*00.00	*00.00
O-CHLOROTOLUENE.........	0.33	0.00	*00.00	0.00	*00.00	*00.00
P-CHLOROTOLUENE.........	0.17	0.00	*00.00	0.00	*00.00	*00.00
P-DICHLOROBENZENE.......	0.04	0.00	*00.00	0.00	*00.00	*00.00
O-DICHLOROBENZENE.......	0.06	0.00	*00.00	0.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	1/ 4	1/10	1/16	1/21	1/28	2/ 3
VINYL CHLORIDE	0.00	0.00	0.00	*00.00	*00.00	0.00
1,1-DICHLOROETHYLENE	0.00	0.00	0.00	*00.00	0.00	0.00
METHYL ETHYL KETONE	0.00	0.00	0.00	*00.00	0.00	0.00
CHLOROFORM	0.00	0.00	0.00	*00.00	0.01	0.00
BENZENE	0.41	1.60	1.10	*00.00	3.30	1.40
CARBON TETRACHLORIDE	0.00	0.01	0.00	*00.00	0.00	0.00
TRICHLOROETHYLENE	0.01	0.01	0.80	*00.00	0.01	0.01
1,1,2-TRICHLOROETHANE	0.00	0.00	0.00	*00.00	0.00	0.00
TOLUENE	0.36	1.60	3.20	*00.00	3.50	1.50
1,2-DIBROMOETHANE	0.00	0.00	0.00	*00.00	0.00	0.00
TETRACHLOROETHYLENE	0.17	0.16	0.63	*00.00	1.80	0.90
CHLOROBENZENE	0.00	0.05	0.49	*00.00	0.38	0.00
ETHYL BENZENE	0.01	0.10	0.13	*00.00	0.95	0.01
PARA/META XYLENES	0.10	0.39	0.47	*00.00	1.50	0.41
ORTHO XYLENE	0.00	0.09	0.17	*00.00	0.45	0.01
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	*00.00	0.00	0.00
NITROBENZENE	0.00	0.00	0.00	*00.00	0.00	0.00
STYRENE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
O-CHLOROTOLUENE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
P-CHLOROTOLUENE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
P-DICHLOROBENZENE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
O-DICHLOROBENZENE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	2/ 9	2/15	2/21	2/27	3/ 4	3/10
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	0.00	0.00	0.00
1,1-DICHLOROETHYLENE....	0.00	*00.00	*00.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	0.00	*00.00	*00.00	0.00	0.00	0.00
CHLOROFORM.............	0.01	*00.00	*00.00	0.00	0.01	0.01
BENZENE................	2.10	*00.00	*00.00	1.10	1.00	2.20
CARBON TETRACHLORIDE....	0.01	*00.00	*00.00	0.00	0.01	0.01
TRICHLOROETHYLENE.......	0.00	*00.00	*00.00	0.00	1.90	0.74
1,1,2-TRICHLOROETHANE...	0.01	*00.00	*00.00	0.00	0.00	0.00
TOLUENE................	1.70	*00.00	*00.00	1.30	1.90	1.30
1,2-DIBROMOETHANE.......	0.00	*00.00	*00.00	0.00	0.46	0.00
TETRACHLOROETHYLENE.....	1.00	*00.00	*00.00	0.00	1.30	1.20
CHLOROBENZENE...........	0.04	*00.00	*00.00	0.01	0.91	0.09
ETHYL BENZENE...........	0.36	*00.00	*00.00	0.01	1.00	0.24
PARA/META XYLENES	0.75	*00.00	*00.00	0.01	1.10	0.34
ORTHO XYLENE	0.00	*00.00	*00.00	*00.00	0.95	0.09
1,1,2,2TETRACHLOROETHANE	0.00	*00.00	*00.00	0.00	0.00	0.00
NITROBENZENE............	0.00	*00.00	*00.00	0.00	0.00	0.00
STYRENE.................	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
O-CHLOROTOLUENE.........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
P-CHLOROTOLUENE.........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
P-DICHLOROBENZENE.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
O-DICHLOROBENZENE.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	3/16	3/22	3/28	4/ 3	4/ 9	4/15
VINYL CHLORIDE..........	0.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	*00.00	0.00	*00.00	*00.00	*00.00	*00.00
METHYL ETHYL KETONE.....	*00.00	0.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	*00.00	0.02	*00.00	*00.00	*00.00	*00.00
BENZENE.................	*00.00	1.60	*00.00	*00.00	*00.00	*00.00
CARBON TETRACHLORIDE....	*00.00	0.01	*00.00	*00.00	*00.00	*00.00
TRICHLOROETHYLENE.......	*00.00	0.03	*00.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	*00.00	0.43	*00.00	*00.00	*00.00	*00.00
TOLUENE.................	*00.00	0.47	*00.00	*00.00	*00.00	*00.00
1,2-DIBROMOETHANE.......	*00.00	0.05	*00.00	*00.00	*00.00	*00.00
TETRACHLOROETHYLENE.....	*00.00	0.06	*00.00	*00.00	*00.00	*00.00
CHLOROBENZENE...........	*00.00	0.39	*00.00	*00.00	*00.00	*00.00
ETHYL BENZENE...........	*00.00	0.23	*00.00	*00.00	*00.00	*00.00
PARA/META XYLENES	*00.00	0.44	*00.00	*00.00	*00.00	*00.00
ORTHO XYLENE	*00.00	0.33	*00.00	*00.00	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	*00.00	0.02	*00.00	*00.00	*00.00	*00.00
NITROBENZENE............	*00.00	0.00	*00.00	*00.00	*00.00	*00.00
STYRENE.................	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
O-CHLOROTOLUENE.........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
P-CHLOROTOLUENE.........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
P-DICHLOROBENZENE.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
O-DICHLOROBENZENE.......	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

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                                         1980
                                       AT:BATSTO
                                  IN PARTS PER BILLION
COMPOUND NAME
                              4/21     4/27     5/ 3     5/ 9     5/15     5/21

VINYL CHLORIDE..........    *00.00     0.00     0.00     0.00     0.00     0.01
1,1-DICHLOROETHYLENE....    *00.00     0.00     0.00     0.00     0.00     0.00
METHYL ETHYL KETONE.....    *00.00     0.00     0.00     0.00     0.00     0.00
CHLOROFORM..............    *00.00     0.00     0.00     0.00     0.00     0.00
BENZENE.................    *00.00     0.05     0.02     0.02     0.01     0.02
CARBON TETRACHLORIDE....    *00.00     2.30     0.52     1.30     1.10     1.90
TRICHLOROETHYLENE.......    *00.00     0.06     0.01     0.01     0.02     0.08
1,1,2-TRICHLOROETHANE...    *00.00     0.07     0.03     0.06     0.06     0.23
TOLUENE.................    *00.00     0.00     0.00     0.01     0.01     0.19
1,2-DIBROMOETHANE.......    *00.00     7.90     0.64     8.30     1.80     3.20
TETRACHLOROETHYLENE.....    *00.00     0.12     0.00     0.01     0.00     0.15
CHLOROBENZENE...........    *00.00     0.23     0.26     0.24     0.29     1.00
ETHYL BENZENE...........    *00.00     0.11     0.08     0.16     0.31     0.32
PARA/META XYLENES ......    *00.00     0.15     0.08     0.22     0.32     0.28
ORTHO XYLENE ...........    *00.00     0.27     0.22     0.59     0.99     0.75
1,1,2,2TETRACHLOROETHANE    *00.00     0.10     0.06     0.19     0.34     1.90
NITROBENZENE............    *00.00     0.10     0.00     0.00     0.00     0.07
STYRENE.................    *00.00     0.00     0.00     0.00     0.00     0.00
O-CHLOROTOLUENE.........    *00.00   *00.00   *00.00   *00.00   *00.00   *00.00
P-CHLOROTOLUENE.........    *00.00   *00.00   *00.00   *00.00   *00.00     0.61
P-DICHLOROBENZENE.......    *00.00   *00.00   *00.00   *00.00   *00.00     0.40
O-DICHLOROBENZENE.......    *00.00   *00.00   *00.00   *00.00   *00.00     0.07
                                                                          0.01
*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB
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1980
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	5/27	6/ 2	6/ 8	6/14	6/20	6/26
VINYL CHLORIDE...........	0.00	0.00	0.00	0.00	0.00	0.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	0.00	0.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.03	0.02	0.09	0.05	0.06	0.18
BENZENE.................	0.99	0.62	0.54	1.00	1.10	0.91
CARBON TETRACHLORIDE....	0.07	0.02	0.22	0.10	0.15	0.05
TRICHLOROETHYLENE.......	0.08	0.03	0.03	0.08	0.01	0.07
1,1,2-TRICHLOROETHANE...	0.01	0.07	*00.00	0.00	0.01	0.96
TOLUENE.................	1.70	0.70	1.10	2.60	1.60	0.57
1,2-DIBROMOETHANE.......	0.01	0.01	0.00	0.01	0.01	0.26
TETRACHLOROETHYLENE.....	0.26	0.14	0.11	0.49	0.11	0.13
CHLOROBENZENE...........	0.10	0.04	0.07	0.09	0.06	0.10
ETHYL BENZENE...........	0.15	0.06	0.21	0.30	0.16	0.06
PARA/META XYLENES	0.40	0.16	0.81	0.96	0.71	0.14
ORTHO XYLENE	0.11	0.06	0.26	0.05	0.28	0.15
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.04	0.00	0.01	0.41
NITROBENZENE............	0.00	0.00	0.00	0.00	0.00	*00.00
STYRENE.................	0.01	0.02	0.08	0.03	0.03	0.25
O-CHLOROTOLUENE.........	0.01	0.00	0.09	0.10	0.00	*00.00
P-CHLOROTOLUENE.........	0.03	0.00	0.04	0.01	0.00	*00.00
P-DICHLOROBENZENE.......	0.00	0.00	0.00	0.00	0.00	*00.00
O-DICHLOROBENZENE.......	0.00	0.00	0.00	0.00	0.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	7/ 2	7/ 8	7/14	7/20	7/26	8/ 1
VINYL CHLORIDE..........	0.00	0.00	0.00	0.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	0.00	*00.00	*00.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.29	0.03	0.69	0.78	*00.00	*00.00
BENZENE.................	1.10	0.61	0.80	2.00	*00.00	*00.00
CARBON TETRACHLORIDE....	0.06	0.12	0.02	0.10	*00.00	*00.00
TRICHLOROETHYLENE.......	0.08	0.06	0.11	0.30	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.37	0.58	0.00	0.47	*00.00	*00.00
TOLUENE.................	1.90	0.36	1.80	3.90	*00.00	*00.00
1,2-DIBROMOETHANE.......	0.05	0.01	0.07	0.48	*00.00	*00.00
TETRACHLOROETHYLENE.....	0.22	0.09	0.20	0.42	*00.00	*00.00
CHLOROBENZENE...........	0.09	0.02	0.17	0.83	*00.00	*00.00
ETHYL BENZENE...........	0.14	0.05	0.15	0.91	*00.00	*00.00
PARA/META XYLENES	0.39	0.12	0.35	1.80	*00.00	*00.00
ORTHO XYLENE	0.22	0.07	0.15	0.98	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	0.06	0.01	0.29	2.00	*00.00	*00.00
NITROBENZENE............	0.00	0.00	0.00	0.00	*00.00	*00.00
STYRENE.................	0.11	0.04	0.62	3.60	*00.00	*00.00
O-CHLOROTOLUENE.........	0.05	0.09	0.18	0.00	*00.00	*00.00
P-CHLOROTOLUENE.........	0.02	0.01	0.01	0.00	*00.00	*00.00
P-DICHLOROBENZENE.......	0.00	0.00	0.00	0.00	*00.00	*00.00
O-DICHLOROBENZENE.......	0.00	0.00	0.00	0.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	8/ 7	8/13	8/19	8/25	8/31	9/ 6
VINYL CHLORIDE..........	*00.00	0.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	0.00	*00.00	*00.00	*00.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.68	1.25	1.56	*00.00	*00.00	*00.00
BENZENE.................	1.38	1.48	2.05	*00.00	*00.00	*00.00
CARBON TETRACHLORIDE....	0.04	0.16	0.10	*00.00	*00.00	*00.00
TRICHLOROETHYLENE.......	0.06	0.01	0.21	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	*00.00	*00.00	*00.00
TOLUENE.................	1.77	4.11	3.88	*00.00	*00.00	*00.00
1,2-DIBROMOETHANE.......	0.00	0.00	0.00	*00.00	*00.00	*00.00
TETRACHLOROETHYLENE.....	0.01	0.51	0.29	*00.00	*00.00	*00.00
CHLOROBENZENE...........	0.07	0.16	0.18	*00.00	*00.00	*00.00
ETHYL BENZENE...........	0.14	0.44	0.21	*00.00	*00.00	*00.00
PARA/META XYLENES	0.60	0.65	0.63	*00.00	*00.00	*00.00
ORTHO XYLENE	0.23	0.78	0.26	*00.00	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	*00.00	*00.00	*00.00
NITROBENZENE............	0.06	0.00	0.30	*00.00	*00.00	*00.00
STYRENE.................	0.16	0.10	0.30	*00.00	*00.00	*00.00
O-CHLOROTOLUENE.........	0.01	0.01	0.01	*00.00	*00.00	*00.00
P-CHLOROTOLUENE.........	0.01	0.01	0.01	*00.00	*00.00	*00.00
P-DICHLOROBENZENE.......	0.11	0.00	2.62	*00.00	*00.00	*00.00
O-DICHLOROBENZENE.......	0.01	0.00	0.01	*00.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW-DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	9/12	9/18	9/24	9/30	10/ 6	10/12
VINYL CHLORIDE	55.98	55.98	55.98	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE	0.00	0.00	0.00	*00.00	*00.00	*00.00
METHYL ETHYL KETONE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM	1.16	1.18	0.38	*00.00	*00.00	*00.00
BENZENE	1.02	1.03	0.67	*00.00	*00.00	*00.00
CARBON TETRACHLORIDE	0.00	0.00	0.00	*00.00	*00.00	*00.00
TRICHLOROETHYLENE	0.10	0.14	0.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE	0.00	0.00	0.00	*00.00	*00.00	*00.00
TOLUENE	1.50	2.40	0.40	*00.00	*00.00	*00.00
1, 2-DIBROMOETHANE	0.00	0.00	0.00	*00.00	*00.00	*00.00
TETRACHLOROETHYLENE	0.16	0.24	0.00	*00.00	*00.00	*00.00
CHLOROBENZENE	0.15	0.03	0.00	*00.00	*00.00	*00.00
ETHYL BENZENE	0.98	0.25	0.03	*00.00	*00.00	*00.00
PARA/META XYLENES	5.36	0.91	0.13	*00.00	*00.00	*00.00
ORTHO XYLENE	4.49	0.32	0.05	*00.00	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	0.00	0.01	0.00	*00.00	*00.00	*00.00
NITROBENZENE	0.66	0.41	*00.00	*00.00	*00.00	*00.00
STYRENE	0.50	0.24	0.38	*00.00	*00.00	*00.00
O-CHLOROTOLUENE	1.10	0.14	0.00	*00.00	*00.00	*00.00
P-CHLOROTOLUENE	2.40	0.25	0.01	*00.00	*00.00	*00.00
P-DICHLOROBENZENE	0.31	0.70	*00.00	*00.00	*00.00	*00.00
O-DICHLOROBENZENE	0.36	0.24	*00.00	*00.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	10/18	10/24	10/30	11/ 5	11/11	11/17
VINYL CHLORIDE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE	*00.00	*00.00	*00.00	*00.00	0.00	0.00
METHYL ETHYL KETONE	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM	*00.00	*00.00	*00.00	*00.00	0.00	0.00
BENZENE	*00.00	*00.00	*00.00	*00.00	0.15	0.40
CARBON TETRACHLORIDE	*00.00	*00.00	*00.00	*00.00	0.00	0.00
TRICHLOROETHYLENE	*00.00	*00.00	*00.00	*00.00	0.00	0.00
1,1,2-TRICHLOROETHANE	*00.00	*00.00	*00.00	*00.00	0.00	0.00
TOLUENE	*00.00	*00.00	*00.00	*00.00	0.50	0.50
1,2-DIBROMOETHANE	*00.00	*00.00	*00.00	*00.00	0.00	0.00
TETRACHLOROETHYLENE	*00.00	*00.00	*00.00	*00.00	0.00	0.00
CHLOROBENZENE	*00.00	*00.00	*00.00	*00.00	0.00	0.00
ETHYL BENZENE	*00.00	*00.00	*00.00	*00.00	0.00	0.00
PARA/META XYLENES	*00.00	*00.00	*00.00	*00.00	0.40	0.01
ORTHO XYLENE	*00.00	*00.00	*00.00	*00.00	0.00	0.00
1,1,2,2TETRACHLOROETHANE	*00.00	*00.00	*00.00	*00.00	0.00	0.00
NITROBENZENE	*00.00	*00.00	*00.00	*00.00	0.00	0.00
STYRENE	*00.00	*00.00	*00.00	*00.00	0.00	0.00
O-CHLOROTOLUENE	*00.00	*00.00	*00.00	*00.00	0.00	0.00
P-CHLOROTOLUENE	*00.00	*00.00	*00.00	*00.00	0.00	0.00
P-DICHLOROBENZENE	*00.00	*00.00	*00.00	*00.00	0.00	0.00
O-DICHLOROBENZENE	*00.00	*00.00	*00.00	*00.00	0.00	0.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

1980
AT:BATSTO
IN PARTS PER BILLION

COMPOUND NAME	11/23	11/29	12/ 5	12/11	12/17	12/23
VINYL CHLORIDE..........	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
1,1-DICHLOROETHYLENE....	0.00	0.00	*00.00	*00.00	*00.00	*00.00
METHYL ETHYL KETONE.....	*00.00	*00.00	*00.00	*00.00	*00.00	*00.00
CHLOROFORM..............	0.10	0.30	0.01	*00.00	*00.00	*00.00
BENZENE.................	0.29	1.90	0.00	*00.00	*00.00	*00.00
CARBON TETRACHLORIDE....	0.00	0.01	0.01	*00.00	*00.00	*00.00
TRICHLOROETHYLENE.......	0.00	0.00	0.00	*00.00	*00.00	*00.00
1,1,2-TRICHLOROETHANE...	0.00	0.00	0.00	*00.00	*00.00	*00.00
TOLUENE.................	0.54	2.13	0.45	*00.00	*00.00	*00.00
1,2-DIBROMOETHANE.......	0.00	0.00	0.00	*00.00	*00.00	*00.00
TETRACHLOROETHYLENE.....	0.00	0.12	0.01	*00.00	*00.00	*00.00
CHLOROBENZENE...........	0.00	0.00	0.00	*00.00	*00.00	*00.00
ETHYL BENZENE...........	0.10	0.11	0.01	*00.00	*00.00	*00.00
PARA/META XYLENES	0.06	0.65	0.13	*00.00	*00.00	*00.00
ORTHO XYLENE	0.01	0.09	0.01	*00.00	*00.00	*00.00
1,1,2,2TETRACHLOROETHANE	0.00	0.00	0.00	*00.00	*00.00	*00.00
NITROBENZENE............	*00.00	*00.00	0.00	*00.00	*00.00	*00.00
STYRENE.................	0.01	0.01	0.00	*00.00	*00.00	*00.00
O-CHLOROTOLUENE.........	*00.00	*00.00	0.00	*00.00	*00.00	*00.00
P-CHLOROTOLUENE.........	*00.00	*00.00	0.00	*00.00	*00.00	*00.00
P-DICHLOROBENZENE.......	*00.00	*00.00	0.00	*00.00	*00.00	*00.00
O-DICHLOROBENZENE.......	*00.00	*00.00	0.00	*00.00	*00.00	*00.00

*0.00-----NO ANALYSIS
0.00-----BELOW DETECTION LIMIT

N.J.I.T. AIR POLLUTION RESEARCH LAB

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NJIT AIR POLLUTION RESEARCH LABORATORY

MARINER'S HARBOR-STATEN ISLAND 1981

	SAMPLING DATES								
	12/23 (1980)	01/04	01/28	02/15	02/22	03/11	03/17	03/23	04/04
VINYLIDENE CHLORIDE									
ACRYLONITRILE									
METHYL ETHYL KETONE								0.13	--
CHLOROFORM	2.45	0.04		--	0.04	0.17	0.33	0.13	0.03
1,2-DICHLOROETHANE	--	--		--	--	--	--	--	--
BENZENE	7.2	1.3	0.33	5.5	1.4	0.69	0.20	2.8	0.64
CARBON TETRACHLORIDE	0.16	TRACE		0.09	0.52	0.24	0.04	TRACE	--
TRICHLOROETHYLENE	1.8	0.01		--	--	--	--	0.20	0.035
DIOXANE	--	--		--	--	--	--	--	--
1,1,2-TRICHLOROETHANE	--	--		--	--	--	--	--	--
TOLUENE	19.5	1.9	0.93	10.6	2.4	2.40	0.72	4.50	0.93
1,2-DIBROMOETHANE	--	--		--	--	--	--	--	--
TETRACHLOROETHYLENE	1.05	0.15		0.23	0.48	0.15	0.08	0.24	0.05
CHLOROBENZENE	--	--			0.10	--	--	--	
ETHYLBENZENE	1.8	0.20		1.2	0.31	0.10	0.04	0.50	0.17
p-XYLENE	5.8	0.67	0.18	4.1	0.99	0.59	0.19	1.5	0.39
m-XYLENE	--	--		--	--	--	--	--	--
STYRENE	0.37	0.05		0.30	0.13	0.02	--	0.10	0.06
o-XYLENE	1.95	0.21	0.04	0.99	0.37	0.08	0.03	0.52	0.02
1,1,2,2-TETRACHLOROETHANE	0.06	--		--	--	--	--	--	--
o-CHLOROTOLUENE									
p-CHLOROTOLUENE									
BENZYLCHLORIDE									
p-DICHLOROBENZENE									
o-DICHLOROBENZENE									
NITROBENZENE									

NJIT AIR POLLUTION RESEARCH LABORATORY

MARINER'S HARBOR--STATEN ISLAND 1981

SAMPLING DATES

	04/16	04/28	05/04	05/10	05/16	05/22	05/28	06/16	06/22
VINYLIDENE CHLORIDE			1.1	0.34	0.70	TRACE	0.42	0.10	
ACRYLONITRILE	0.07	0.07	0.30	0.04	0.31	0.04	0.15	0.10	
METHYLENE CHLORIDE			0.20	0.23	0.02	0.27	TRACE	0.13	
CHLOROFORM	0.29	0.16	0.09	0.04	0.43	0.25	0.03	0.10	0.11
1,2-DICHLOROETHANE	--	--	--	--	--	--	--	--	--
BENZENE	2.20	0.73	1.1	0.67	1.1	1.3	0.60	1.0	0.57
CARBON TETRACHLORIDE	0.017	0.01	0.007	0.07	TRACE	0.09	0.03	0.07	--
TRICHLOROETHLYENE	0.04	0.05	0.04	0.07	TRACE	0.20	0.05	0.12	0.09
DIOXANE	--	--	--	0.03	--	0.15	TRACE	--	--
1,1,2-TRICHLOROETHANE	--	--	--	--	--	--	--	--	--
TOLUENE	2.9	0.82	1.9	1.0	1.9	1.9	0.70	2.8	0.90
1,2-DIBROMOETHANE	--	--	--	--	--	0.04	--	--	--
TETRACHLOROETHYLENE	0.25	0.08	0.33	0.20	0.33	0.37	0.25	0.25	0.07
CHLOROBENZENE	0.18	0.05	0.07	0.06	0.07	0.10	0.03	0.07	0.04
ETHYLBENZENE	0.30	0.06	0.78	0.12	0.25	0.26	0.09	0.27	0.10
p-XYLENE	0.80	0.19	0.78	0.03	0.78	0.65	0.30	0.68	0.30
m-XYLENE	--	---	--	--	--	--	--	--	--
STYRENE	0.10	--	0.09	0.05	0.09	0.25	0.04	0.05	0.04
o-XYLENE	0.25	0.06	0.24	0.09	0.24	0.21	0.08	0.20	0.09
1,1,2,2-TETRACHLOROETHANE	--	--	--	--	--	0.11	--	--	--
o-CHLOROTOLUENE			0.01	0.01	0.01	0.12	0.01	0.01	TRACE
p-CHLOROTOLUENE			0.92	0.80	0.37	0.63	0.40	0.27	0.10
BENZYLCHLORIDE									
p-DICHLOROBENZENE			--	--	--	--	--	--	--
o-DICHLOROBENZENE			--	--	--	--	--	--	--
NITROBENZENE			0.11	0.11	0.11	0.33	0.1	0.10	0.20

ALL CONCENTRATIONS ARE EXPRESSED IN PARTS-PER-BILLION
-- INDICATES COMPOUND NOT DETECTED
BLANK INDICATES ANALYSIS NOT POSSIBLE
TRACE INDICATES COMPOUND FOUND NEAR DETECTION LEVEL (0.01 PPB)

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MARINER'S HARBOR--STATEN ISLAND 1981

SAMPLING DATES

	06/28	/	/	/	/	/	/	/	/
VINYLIDENE CHLORIDE	1.25								
ACRYLONITRILE	0.23								
METHYLENE CHLORIDE	0.13								
CHLOROFORM	1.46								
1,2-DICHLOROETHANE	--								
BENZENE	1.98								
CARBON TETRACHLORIDE	--								
TRICHLOROETHLYENE	0.11								
DIOXANE	0.02								
1,1,2-TRICHLOROETHANE	--								
TOLUENE	5.36								
1,2-DIBROMOETHANE	--								
TETRACHLOROETHYLENE	0.20								
CHLOROBENZENE	0.12								
ETHYLBENZENE	0.64								
P-XYLENE	2.09								
M-XYLENE	--								
STYRENE	0.10								
O-XYLENE	0.64								
1,1,2,2-TETRACHLOROETHANE	--								
O-CHLOROTOLUENE	0.01								
P-CHLOROTOLUENE	0.19								
BENZYLCHLORIDE									
P-DICHLOROBENZENE	0.11								
O-DICHLOROBENZENE	0.02								
NITROBENZENE	--								

ALL CONCENTRATIONS ARE EXPRESSED IN PARTS-PER-BILLION

-- INDICATES COMPOUND NOT DETECTED

BLANK INDICATES ANALYSIS NOT POSSIBLE

TRACE INDICATES COMPOUND FOUND NEAR DETECTION LEVEL (0.01 PPB)

NJIT AIR POLLUTION RESEARCH LABORATORY

TRAVIS-STATEN ISLAND 1981

	SAMPLING DATES								
	01/04	01/22	02/03	02/09	02/15	02/22	02/27	03/23	03/29
VINYLIDENE CHLORIDE									
ACRYLONITRILE							0.03	0.014	
METHYL ETHYL KETONE									
CHLOROFORM	.006	0.13	0.03		0.04	0.05	0.11	0.06	0.03
1,2-DICHLOROETHANE	--	--	--		--	--	--	--	--
BENZENE	0.66	1.2	0.89	0.80	3.5	0.75	1.45	1.2	1.4
CARBON TETRACHLORIDE	--	0.14	--		0.06	0.91	0.56	0.01	--
TRICHLOROETHLYENE	--	--	--		--	0.08	0.37	0.24	--
DIOXANE	--	--	--		--	--	--	--	--
1,1,2-TRICHLOROETHANE	--	--	--		--	--	--	--	--
TOLUENE	1.4	3.2	0.28	1.8	5.8	1.35	4.6	2.6	1.2
1,2-DIBROMOETHANE	--	--	--		--	--	--	--	--
TETRACHLOROETHYLENE	0.22	0.42	0.09		0.18	0.25	0.16	0.13	0.16
CHLOROBENZENE	--	--	--		0.10	--	0.10	0.24	0.02
ETHYLBENZENE	0.08	0.29	0.10		0.60	0.14	0.20	0.30	0.15
p-XYLENE	0.33	0.89	0.40	0.19	2.0	0.48	1.5	0.37	0.44
m-XYLENE	--	--	--		--	--	--	--	--
STYRENE	0.03	0.06	--	0.05	0.13	0.05	0.13	0.18	0.35
o-XYLENE	0.07	0.24	0.06	0.03	0.63	0.15	0.19	0.26	0.17
1,1,2,2-TETRACHLOROETHANE	--	--	--		--	--	--	--	--
o-CHLOROTOLUENE									
p-CHLOROTOLUENE									
BENZYLCHLORIDE									
p-DICHLOROBENZENE									
o-DICHLOROBENZENE									
NITROBENZENE									

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NYIT AIR POLLUTION RESEARCH LABORATORY

TRAVIS--STATEN ISLAND 1981

	SAMPLING DATES								
	04/10	04/16	04/22	04/28	05/09	05/10	05/16	05/22	05/28
VINYLIDENE CHLORIDE					0.20	--	0.40	0.23	0.93
ACRYLONITRILE	0.13	0.15			0.07	0.06	0.05	0.12	0.46
METHYLENE CHLORIDE					--	0.08	0.44	0.15	0.20
CHLOROFORM	0.08	--	0.43	0.14	0.06	0.04	0.05	0.08	0.15
1,2-DICHLORDETHANE	--	--	--	--	--	--	--	--	--
BENZENE	1.6	1.8	3.47	2.67	0.35	0.24	0.69	0.73	1.4
CARBON TETRACHLORIDE	0.03	0.03	--	0.08	--	--	--	0.03	0.11
TRICHLOROETHLYENE	--	--	0.05	0.49	--	0.02	0.05	0.11	--
DIOXANE	--	--	TRACE	--	0.03	0.04	0.03	0.03	--
1,1,2-TRICHLOROETHANE	--	--	--	--	--	--	--	--	--
TOLUENE	0.22	2.20	3.09	7.71	1.16	0.15	1.43	1.80	0.82
1,2-DIBROMOETHANE	--	--	--	--	--	--	--	--	--
TETRACHLOROETHYLENE	0.48	0.46	0.28	0.88	0.06	0.03	0.04	0.25	0.16
CHLOROBENZENE			0.07	0.21	0.04	0.03	0.03	0.06	0.07
ETHYLBENZENE	0.30	0.37	0.29	0.83	0.23	0.03	0.06	0.17	0.10
p-XYLENE	0.90	0.40	0.81	2.36	0.84	0.09	0.19	0.46	0.32
m-XYLENE	--	--	--	--	--	--	--	--	--
STYRENE	0.25	0.20	0.10	0.22	0.12	0.04	0.01	0.03	0.09
o-XYLENE	0.25	0.25	0.24	0.75	0.17	0.03	0.05	0.13	0.09
1,1,2,2-TETRACHLORDETHANE	--	--	--	--	--	--	--	--	--
o-CHLOROTOLUENE			0.02	0.03	0.06	0.02	--	0.01	0.03
p-CHLOROTOLUENE			0.75	0.82	0.03	0.25	0.1	0.41	0.03
BENZYLCHLORIDE									
p-DICHLOROBENZENE			--	--	0.11	0.03	0.05	--	--
o-DICHLOROBENZENE			--	--	0.03	0.04	--	--	--
NITROBENZENE			0.10	--	0.09	0.22	--	0.12	0.08

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BLANK INDICATES ANALYSIS NOT POSSIBLE
TRACE INDICATES COMPOUND FOUND NEAR DETECTION LEVEL (0.01 PPB)

NJIT AIR POLLUTION RESEARCH LABORATORY

TRAVIS--STATEN ISLAND 1981

	SAMPLING DATES				
	06/04	06/10	06/15	06/22	06/28
VINYLIDENE CHLORIDE	0.21			--	0.07
ACRYLONITRILE	0.02			0.09	0.07
METHYLENE CHLORIDE	0.26			TRACE	0.39
CHLOROFORM	0.11	0.15	0.58	0.07	0.41
1,2-DICHLOROETHANE	--	--	--	--	--
BENZENE	1.52	2.3	0.80	0.70	1.19
CARBON TETRACHLORIDE	0.01	0.02	TRACE	--	--
TRICHLOROETHLYENE	0.06	0.19	0.16	0.06	0.28
DIOXANE	--	--	--	--	0.02
1,1,2-TRICHLOROETHANE	--	--	--	--	--
TOLUENE	0.64	7.5	2.7	3.5	5.04
1,2-DIBROMOETHANE	--	--	--	--	--
TETRACHLOROETHYLENE	0.03	0.24	0.37	0.15	0.48
CHLOROBENZENE	0.02	0.15	0.10	0.08	0.11
ETHYLBENZENE	0.03	0.40	0.23	0.25	0.56
P-XYLENE	0.08	1.2	0.50	0.75	1.71
M-XYLENE	--	--	--	--	--
STYRENE	0.02	0.12	0.04	0.04	0.10
O-XYLENE	0.03	0.31	0.14	0.20	0.46
1,1,2,2-TETRACHLOROETHANE	--	--	--	--	--
O-CHLOROTOLUENE	--	0.01	0.01	TRACE	0.01
P-CHLOROTOLUENE	--	0.04	0.05	0.12	0.16
BENZYLCHLORIDE					
P-DICHLOROBENZENE	--	--	--	--	0.10
O-DICHLOROBENZENE	--	--	--	0.01	0.03
NITROBENZENE	--	--	--	--	0.02

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NYU AIR POLLUTION RESEARCH LABORATORY

YORKVILLE-MANHATTAN 1981

	SAMPLING DATES							
	01/04	01/22	02/03	02/09	02/15	02/22	03/05	04/16
VINYLIDENE CHLORIDE								
ACRYLONITRILE								
METHYL ETHYL KETONE								
CHLOROFORM	0.10	0.07	0.06	0.03	0.075	0.10	0.10	0.77
1,2-DICHLOROETHANE	--	--	--	--	--	--	--	--
BENZENE	1.5	2.2	1.7	2.0	4.4	1.8	1.56	
CARBON TETRACHLORIDE	0.002	--	0.15	--	0.06	0.02	0.002	0.09
TRICHLOROETHLYENE	TRACE	TRACE	--	--	TRACE	TRACE	TRACE	0.16
DIOXANE	--	--	--	--	--	--	--	--
1,1,2-TRICHLOROETHANE	--	--	--	--	--	--	TRACE	--
TOLUENE	3.1	4.1	2.83	3.6	9.2	3.6	3.01	15.8
1,2-DIBROMOETHANE	--	--	--	--	--	--	--	--
TETRACHLOROETHYLENE	0.59	1.1	1.6	1.6	0.58	0.55	0.59	5.7
CHLOROBENZENE				--	0.14	0.06	--	
ETHYLBENZENE	0.35	0.32	0.25	0.20	0.90	0.35	0.35	1.2
p-XYLENE	1.3	1.1	1.06	1.8	3.4	1.3	1.3	3.9
m-XYLENE	--	--	--	--	--	--	--	0.01
STYRENE	--	--	--	--	0.25	0.10	0.02	0.34
o-XYLENE	0.48	0.37	0.29	0.45	0.90	0.43	0.48	1.3
1,1,2,2-TETRACHLOROETHANE	--	--	--	--	--	--	--	--
o-CHLOROTOLUENE								
p-CHLOROTOLUENE								
BENZYLCHLORIDE								
p-DICHLOROBENZENE								
o-DICHLOROBENZENE								
NITROBENZENE								

NJIT AIR POLLUTION RESEARCH LABORATOR

YORKVILLE--MANHATTAN 1981

	SAMPLING DATES							
	04/16	04/22	05/04	05/10	05/16	05/22	05/28	06/22
VINYLIDENE CHLORIDE		2.2	2.2	1.1	0.99	0.49	0.78	0.24
ACRYLONITRILE		2.0	2.0	0.38	0.12	0.07	0.44	0.09
METHYLENE CHLORIDE		3.5	3.5	--	0.53	0.50	1.3	1.3
CHLOROFORM	0.77	0.32	0.27	0.05	0.11	0.26	0.30	0.35
1,2-DICHLOROETHANE	--	--	--	--	--	--	--	--
BENZENE		10.6	2.8	2.4	1.1	2.0	1.3	0.60
CARBON TETRACHLORIDE	0.09	0.01	0.07	0.02	--	0.08	0.02	--
TRICHLOROETHLYENE	0.16	2.0	0.81	0.15	TRACE	0.25	0.18	0.15
DIOXANE	--	0.07	0.04	--	0.03	--	--	--
1,1,2-TRICHLOROETHANE	--	--	--	--	--	--	--	--
TOLUENE	15.8	34.4	7.5	6.4	3.2	4.5	3.4	1.6
1,2-DIBROMOETHANE	--	--	--	--	--	--	TRACE	--
TETRACHLOROETHYLENE	5.7	7.7	2.3	0.99	0.35	1.3	0.58	0.99
CHLOROBENZENE		0.57	0.12	0.11	0.06	0.08	0.21	0.10
ETHYLBENZENE	1.2	3.6	0.87	0.77	0.39	0.60	0.64	0.20
P-XYLENE	3.9	11.2	2.9	2.5	1.2	1.8	1.3	0.84
M-XYLENE	0.01	--	--	--	--	--	--	--
STYRENE	0.34	0.90	0.24	0.28	0.07	0.18	0.20	0.22
O-XYLENE	1.3	3.3	0.80	7.1	0.35	0.55	0.38	0.22
1,1,2,2-TETRACHLOROETHANE	--	--	--	--	--	--	--	--
O-CHLOROTOLUENE		0.11	0.11	0.005	--	0.03		0.02
P-CHLOROTOLUENE		2.2	2.2	0.16	0.46	0.64		0.08
BENZYLCHLORIDE								
P-DICHLOROBENZENE		1.8	1.8	--	-	--	--	--
O-DICHLOROBENZENE		0.60	0.60	--	--	--	--	--
NITROBENZENE		--	--	TRACE	--	0.04	--	0.06

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CON EDISON--STATEN ISLAND 1981

	SAMPLING DATES					
	09/11	09/12	09/13	09/14	09/15	09/16
VINYLIDENE CHLORIDE	0.53	TRACE	--	0.03	0.41	0.70
ACRYLONITRILE	--	TRACE	1.7	1.03	--	0.10
METHYLENE CHLORIDE	0.60	TRACE	--	0.18	0.26	--
CHLOROFORM	--	TRACE	0.03	0.9	0.14	0.26
1,2-DICHLOROETHANE	--	--	--	--	--	--
BENZENE	7.2	2.5	7.5	3.8	1.5	1.8
CARBON TETRACHLORIDE	TRACE	.0005	0.02	0.002	--	0.21
TRICHLOROETHLYENE	0.56	TRACE	TRACE	0.45	0.53	0.53
DIOXANE	0.18	--	--	0.03	TRACE	--
1,1,2-TRICHLOROETHANE	--	--	--	--	--	--
TOLUENE	16.8	7.5	10.7	10.5	6.0	6.9
1,2-DIBROMOETHANE	0.18	--	--	--	--	--
TETRACHLOROETHYLENE	1.2	0.22	0.26	0.64	1.0	0.82
CHLOROBENZENE	0.56	0.16	0.17	0.33	0.13	0.15
ETHYLBENZENE	2.0	0.64	0.83	0.92	0.50	0.65
P-XYLENE	5.2	1.9	2.7	2.7	1.5	2.05
M-XYLENE	0.07	--	--	--	--	--
STYRENE	0.97	0.22	0.32	0.53	0.20	0.33
O-XYLENE	1.35	0.51	0.65	0.70	0.40	0.60
1,1,2,2-TETRACHLOROETHANE	0.07	--	--	--	--	--
O-CHLOROTOLUENE	0.07	0.10	0.04	0.13	0.06	0.04
P-CHLOROTOLUENE	0.31	0.07	0.05	0.13	0.10	0.48
BENZYLCHLORIDE						
P-DICHLOROBENZENE	0.19	0.02	0.16	0.70	0.02	0.11
O-DICHLOROBENZENE	0.2	0.06	0.17	0.10	0.06	0.05
NITROBENZENE	0.22	0.15	0.37	0.07	0.37	0.35

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